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Sealing Wax.

Professor Erdman found, on analyzing some French colored sealing waxes of remarkable beauty, among which the pure white and the rose-red colored ones were especially fine, that the coloring matter consisted chiefly of basic nitrate of bismuth, (bismuth, pearl, or Spanish white,) the rose-red being produced by the addition of carmine. The violet color was also produced by a lake and the pearl white. It appears that no other white pigment can be substituted for the bismuth, as no other has an equal body, and is at the same time suitable to form the ground for the organic pigments, with which alone the delicate colors of some fine colored sealing waxes can be produced. Carbonates like white lead and chalk are not at all suitable, as they froth when mixed with the bleached shellac, apparently by the resin combining with the base, and driving off the carbonic acid. Magnesia is sometimes prescribed for the preparation of colored sealing waxes, but zinc white would evidently be better adapted for the preparation of a cheaper though less beautiful product than that which could be made with the bismuth.—[Journal fur praktische Chemie.

Lime Water in Bread Making.

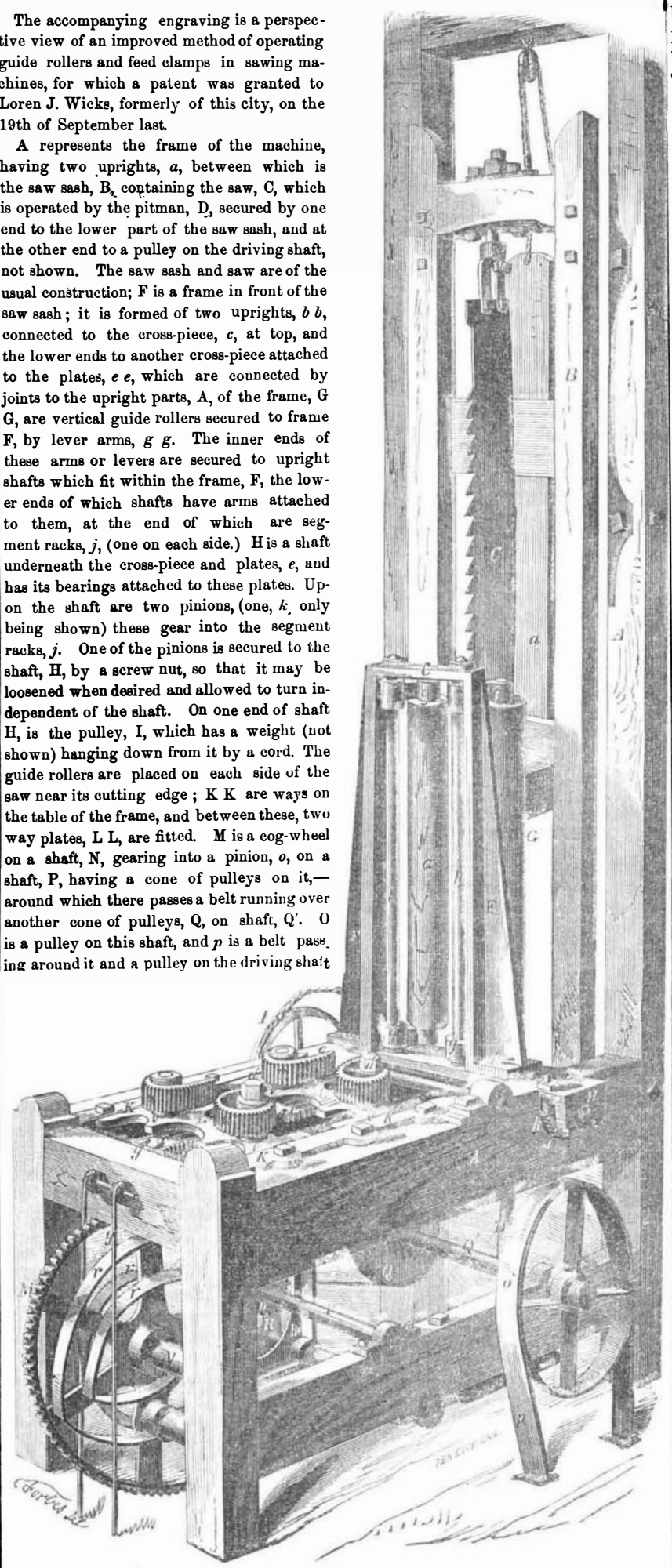
In bread making, the vinous fermentation sometimes passes into the acid, thus rendering the bread sour and disagreeable. Liebig has lately performed a series of experiments to improve the preparation of bread, from which he comes to the conclusion, that the only effective and innocuous means of improving the qualities of wheat and rye bread, is lime water. In making dough he advises one pint of clear lime water to be used for every five lbs. of flour. The lime water is first added to the flour, after which a sufficient quantity of common water is added to work the whole into good common dough—the leaven being mixed with the water. The lime water prevents the bread becoming sour, and is a healthy ingredient. Lime water can be prepared by stirring some quick lime in a vessel containing pure cold water, then allowing the sediment to settle. The clear is then to be poured off, and kept in bottles for use. No care is required respecting the quantity of lime to be stirred in the water, as the water will only take up a certain quantity of lime, and no more. Those who use saleratus (bicarbonate of soda) in the raising of bread, are recommended to cease its use, and employ pure baker's yeast and a little lime water. Our bones are composed of the phosphate of lime, and those who use fine flour require for their health a little more lime than is contained in their food. Cream of tartar and carbonate of soda are far inferior to common yeast for making healthy bread.

Hobbs Awarded a Prize.

Mr. Hobbs has been awarded the Telford Medal by the Institution of Civil Engineers in London, for the paper on locks, which he read during a recent session of the Institution.

IMPROVMENT IN SAWING MACHINERY.

The accompanying engraving is a perspective view of an improved method of operating guide rollers and feed clamps in sawing machines, for which a patent was granted to Loren J. Wicks, formerly of this city, on the 19th of September last.



A represents the frame of the machine, having two uprights, *a*, between which is the saw sash, B, containing the saw, C, which is operated by the pitman, D, secured by one end to the lower part of the saw sash, and at the other end to a pulley on the driving shaft, not shown. The saw sash and saw are of the usual construction; F is a frame in front of the saw sash; it is formed of two uprights, *b b*, connected to the cross-piece, *c*, at top, and the lower ends to another cross-piece attached to the plates, *e e*, which are connected by joints to the upright parts, A, of the frame, G G, are vertical guide rollers secured to frame F, by lever arms, *g g*. The inner ends of these arms or levers are secured to upright shafts which fit within the frame, F, the lower ends of which shafts have arms attached to them, at the end of which are segment racks, *j*, (one on each side.) H is a shaft underneath the cross-piece and plates, *e*, and has its bearings attached to these plates. Upon the shaft are two pinions, (one, *k*, only being shown) these gear into the segment racks, *j*. One of the pinions is secured to the shaft, H, by a screw nut, so that it may be loosened when desired and allowed to turn independent of the shaft. On one end of shaft H, is the pulley, I, which has a weight (not shown) hanging down from it by a cord. The guide rollers are placed on each side of the saw near its cutting edge; K K are ways on the table of the frame, and between these, two way plates, L L, are fitted. M is a cog-wheel on a shaft, N, gearing into a pinion, *o*, on a shaft, P, having a cone of pulleys on it,—around which there passes a belt running over another cone of pulleys, Q, on shaft, Q'. O is a pulley on this shaft, and *p* is a belt passing around it and a pulley on the driving shaft of the machine, which is below the floor and not shown in the figure. On the shaft, P, are hung two bent levers, R R, the lower arms of which fit in irregular circular grooves, *r*, in the sides of the wheel, M, the groove in one side being in a reverse position to the other side. The upper arms of levers, R, are connected by rods to the plates, L L. On the upper surface of each of these plates there are two feeding clamps, *u u*, attached to small shafts, *v v*, which pass through the plates, L, and have pinions on their lower ends which gear into racks, *x*, one to each way-plate. To each of these racks there is attached a cord, *y*, having a weight hung upon its lower end. This machine is employed for re-sawing boards &c.; a piece of timber to be re-sawed is placed between the two pairs of clamps, *u u*, and motion being given to the saw, these clamps move reciprocally backwards and forwards, approaching and then receding from one another, one pair only binding against the board or piece of timber at one time, and feeding forward the board to the saw in a direct central line. This is owing to the connection between each pair of clamps by the rack and pinions, which insure an equal bearing on each side of the board. The guide rollers, G G, also bear equally on each side of the board, for the same reason. In case a piece of stuff has to be cut into three or more parts of equal thickness, the clamps at one side are thrown further out, there being slots in the plates, L L, to allow of this adjustment, and the screws, *a' a'*, effect it. One of the guide rollers, G, is also, in such a case, thrown out of line, by loosening one of the pinions on shaft H, by means of its screw nut. By this method of adjusting the clamps on one side, and one guide roller, the board or stick to be re-sawed can be cut on any straight line, so as to cut a board or plank into any number of parts.—By having the frame, G, secured by hinges to the frame, A, the rollers may be thrown back from the saw, to allow it to be sharpened without taking it out of the sash. The feeding clamps, *u u*, in consequence of the grooves, *r r*, in the sides of wheel M, do not change their movement at the same time, one moves a short distance before the other, so that the board to be re-sawed has no cessation of motion upon the return motion of the clamps. The sawing machinery represented by this figure, is in successful operation—and is held to be a good improvement—at Hanford's Mills, Jersey City; and more information may be obtained by letter addressed to Mr. Wicks, the patentee, at Paterson, N. J.

The Rainbow Fire-Cloud.

To perform thls interesting experiment it is necessary to have a strong thick globe of brass or iron, capable of holding about half-a-pint of liquid. About two inches apart are made two apertures in the globe; into one is fixed a small fountain jet with a tap to turn at will; the other aperture is used for putting certain liquids into the interior, and when not in use must be screwed up perfectly tight.—Thus constructed, the apparatus represents a model steam-boiler—the man-hole to put the water in; the jet to blow the steam off when the water boils. Now for the cloud. When spirit of wine is burned in contact with certain substances the flame is colored green, red, yellow, blue, according to the material used. For the rainbow clouds we take four ounces of spirit, one drachm each of nitrate of copper. These salts will color the flame in the above order. Having well mixed the chemicals with the spirit, it is put into the boiler, and the entrance screwed up, perfectly vapor-proof. The boiler is now set upon a retort-stand, and a spirit-lamp placed underneath it. By means of the jet-tap it is easy to discover when the spirit boils; as soon as this takes place the steam is shut off, and the heat continued for five or six minutes. The jet-tap being now turned on, the whole of the spirit blows out of the boiler with considerable force, and assumes the shape of a cloud, which is formed as the spirit condenses in the air; much in the same way as steam does, as it puffs from the iron-horse. Need it be said that the cloud of spirit is combustible, and that, when ignited, it becomes a fairy rainbow fire-cloud!

SEPTIMUS PIESSE.

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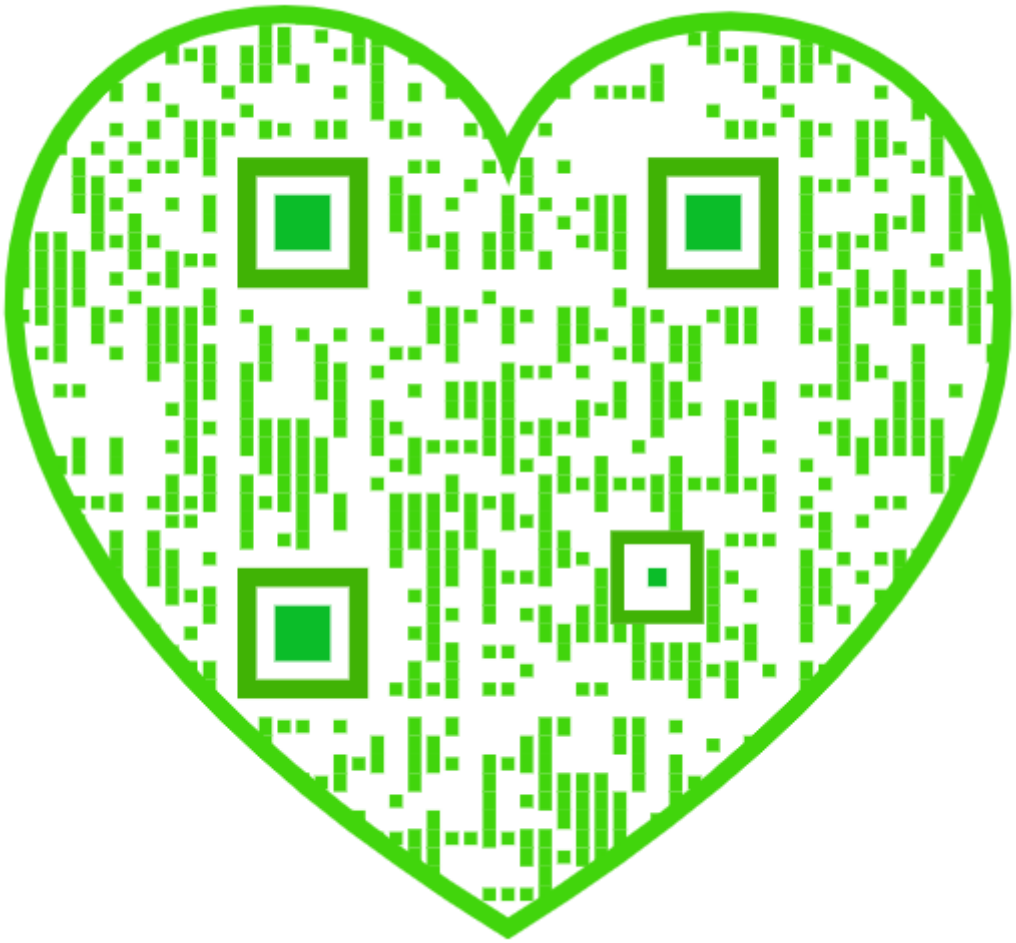

[Correspondence of the Scientific American.]

Three Cylinder Steam Engines.

LONDON, Nov. 13th, 1854.

I have read with much interest, the article in your valuable Journal of June 10th, on the use of three cylinder steam engines, as I was led to devise such an arrangement in 1851, in order to overcome the numerous evils so strongly felt in introducing direct acting engines for screw propulsion. They are admitted to be cheaper, lighter, and more compact than engines with toothed gearing, but yet, after spending ten years in discovering and curing the defects of the "direct" class, a great portion of our mercantile navy continues to be fitted with geared engines.

I should occupy too much of your space by enumerating even a small portion of the accidents which have occurred to direct-acting engines, but they are notorious to every engineer who has had anything to do with them.

My idea in employing three cylinders, was to equalize the strain on the cranks and shafts, so as to admit of a higher speed of piston, and of a higher pressure of steam and more expansion, without increasing the weight and strength of the machinery.

The three cylinders are connected to one crank pin to make the crank shaft more simple and solid, and to diminish the room occupied in the length of the ship. How far these ends are accomplished, I leave others to decide.

An objection has been made that the upper cylinder is exposed to shot, but in fact it is very little higher than the tops of approved marine boilers, and can be well protected by the coal in the bunkers, while the accessibility of every part is secured—a point of the first importance in keeping engines in good order, and in diminishing the cost of repairs. When it has been attempted to make the boilers very low by suppressing the steam chests, as in some vessels of our Navy, the engines have been continually broken down by the boilers priming. In merchant vessels these remarks do not apply.

This system has been patented in England and France, and would have been patented in the U. S. (whither plans were in fact forwarded,) had the heavy charges on the patents of English subjects been reduced to a level even with our own present scale—a result which inventors on this side of the Atlantic hope will be effected ere long, by the powerful aid of the SCIENTIFIC AMERICAN, and public opinion generally.

W. KELD WHYTEHEAD,
Editor London *Artizan*.

[We have received a copy of the drawings and specifications of our correspondent's invention, which has recently been published by the British Commissioners of Patents; it appears to us to be an excellent improvement, well worth the attention of all our marine engineers. We hope, with our correspondent, to see our patent laws amended at the next session, so as to reduce the fees to natives of other countries. The present Commissioner of Patents, Judge Mason, is favorable to it; he is a friend to inventors, and looks upon the inventors of all nations as members of the Republic of inventions.—[ED.

On Compound Interest.

·ncluded from page 90.]

PURCHASE OF ANNUITIES.—The annuity (a), rate of interest (r), and time (t) being given to find the present value (z).

$$z=\frac{a}{r-1}-\frac{a}{r^t\times(r-1)}$$

From the log. of a subtract the log. of (r—1.) and from the remainder the log. of r^t. The difference between the numbers answering to the log. of the two remainders is the value sought.

1.—What is the present value of an annuity of $80, to be paid for 66 years, allowing 5 per cent. per annum?

a=80 t=66 $r-1$=0·05

Log. a=1·9030900
" $r-1$=8·6989700

" $\frac{a}{r-1}$=3·2041200=1600.

Log. r^t=1·3984938

L.r^t=1·3984938

L.$\frac{a}{(r-1)\times r^t}$=1·8056262=63·9185

z=1536·0815

2. The annuity, rate of interest, and present value being given, to find the time.

$$r^t=\frac{\frac{a}{r-1}}{\frac{a}{r-1}-z}$$

From the log. of a subtract tho log. of (r—1), and from the number answering to

Log. a=1·9030900
" $r-1$=8·6989700

Log. $\frac{a}{r-1}$ =3·2041200= 1600
+z=1536·0815

Log. 63·9185=1·8056266 63·9185=$\frac{a}{r-1}-z$

by log. r=0·0211893) 1·3984934(

66 years.

1. The present value, z, time, t, and rate of interest being given to find the annuity.

1—(1+r^t) : z=r—1 : a.—To the complement of the log. of 1—(1+r^t) add the log of z and of r—1; the sum is the log. of a.

What annuity, to be continued 66 years, can be purchased for $1536·08, allowing 5 per cent. per annum compound interest?

z=1536·08 r=1·05 t=56 a=?

Log. r=0·0211893
×t 66

Log. r^t=1·3984938
" 1+r^t=8·6015062= 0·039949=1+r_t
0·960951=1—(1+r^t)

L.1—$\frac{1}{r^t}$=9·9822943

its comp. 0·0177057
Log. z=3·1864138
" $r-1$=8·6989700

Log. a=1·9030995=$80

4. The annuity, present value, and time being given, to find the rate.

This problem is more difficult, and requires the solution of $\frac{a}{z}=\frac{z+a}{z}r^t-\frac{t+1}{r}$ which cannot be solved, unless we first approach r. If the number of years is great, 40 or more, and the rate may be high $1+\frac{a}{z}$ will be nearly the rate, or more accurately $\frac{z+a}{z}-\frac{z^t}{z+a}\times\frac{a}{z}$ call it r, and $\frac{a}{r^t\times r-1}$ call x, then $1+\frac{a}{z+x}$ will approach the true rate sufficiently. Hence as follows:

From the log. of a, and also from the log. of $z+a$, take the log. of z; this latter remainder will be nearly the log. of the rate; multiply this log. by t, and the complement of the product add to the first remainder, the decimal fraction an wering to the sum taken from the former rate will give a more correct rate. With this rate seek x, which add to z, then to the complement of the log. of ($z+a$) add the log. of a, the sum will be the log. of the increase, or of $r-1$, sufficiently near.

What is the rate of compound interest, when an annuity of $80, to be continued 66 years, is worth in present money $1536·0815?

a=80 z=1536·0815 t=66

Log. a=1·9030900
Log. z=3·1864138

1·052081 =8·7166762

Log. $z+a$=3·2084631
Log. z =3·1864138

Log. $z+a$ div. by z=0·0220493
×t 66

t log. $z+a$ div. by z comp. 8·5447462 t log. $z+a$ div. by z=1·4552538

0·00182567 =72614224

first r=1·0502553=lg. r=0·0212942
×t 66

Log. r^t=1·4054172, whose compl. =8·5945828

Log. $r-1$=1·2988181
Log. a=1·9030900

z=1536·0815
x= 62·588

Log. x=1·7964909

$z+x$=1598·6695 l.$z+x$=3·2037535 its comp. =6·7962415

Log. a=1·9030900

Number of log. $r-1$=0·0500546 Log. $r-1$=8·6993315
and therefore the rate is 1·05.

Letter from the Secretary of the Navy—The French Exhibition.

In giving publication to the accompanying letter, a few words of explanation are required of us. In view of the interest manifested by the late administration in the British Industrial Exhibition. by the appointment of Commissioners, and the dispatching of a frigate with the articles of American exhibitors, the Commissioner of this State for the French Exhibition, with that energy and zeal which has distinguished him in the performance of his duties, addressed a letter a short time since to the Secretary of the Navy, to which the following is an answer. We have not space for the publication of the Commissioner's letter, but Secretary Dobbin's, while it naturally conveys some idea of its contents, also shows that he is willing to do all he can to carry out the request respectfully urged upon him.

NAVY DEPARTMENT, Nov. 29th, 1854

S. H. WALES, Esq.,

SIR—I have received your letter of the 27th inst., inviting my efforts to secure the transportation of the articles of handicraft, contributed by American citizens, to the Industrial Exhibition in Paris—which opens May 1st.

The Department appreciates the views presented by you, and feels a deep interest in the Exhibition. It is, however, a matter of regret that there is no fund under my control which can be applied to carry out your wishes.

There is no spare public vessel that could possibly be set apart at this time for the purpose. So soon as men can be enlisted, I propose to send national vessels to the relief of the squadron in the Mediterranean, and if they should be in readiness for public service in time, I will take great pleasure, so far as I can, legitimately, in affording the facilities suggested in your letter. I am, very respectfully, your obedient servant,

J. C. DOBBIN.

Sewing Machines.

Some new improvements in sewing machines have been made by W. H. VanGeison, of Waterbury, Conn., who has taken measures to secure a patent for the same. The first relates to the feed motion, and is applicable to most if not all of the sewing machines now in use. The fabric which is being sewed is moved by means of a reciprocating dog,—which rises above the face of the work table before moving in the required direction of the feed, but sinks below or within the face of the table, before returning to take a new hold. A simple method of arranging the dog to receive, and imparting the motion to it, embrace this improvement. A second, which is applicable to sewing machines which make the chain stitch, consists in a device for insuring the proper opening of every loop as it is left protruding through the cloth by the needle, and thus prevent any loop being missed. A third improvement consists in the arrangement of a buffer, which is placed in a certain position to prevent the noise of the working parts, to obviate jars, and make the whole working of sewing machines more agreeable to the operatives.

The Arctic—An Investigation Demanded.

A number of the lawyers of this city have held meetings for the purpose of pushing forward a legal investigation into the causes which led to the fearful loss of life by the *Arctic*, and whether anything worthy of attention will come out of their meetings or not, we do not know. An investigation seems to be demanded, and we hope it will be carried through, but if our lawyers generally were honest at heart respecting such accidents, our country would not be so disgraced as it has been. Somehow they have always managed to defeat the ends of justice by getting the trials of criminated persons put off from time to time, as in the case of the *Henry Clay*, and at last completely quashed.

The third engineer of the *Arctic*, John Degnon, who stood to his post like a hero, and was among those who escaped, calls for an investigation, he being in possession of information of a peculiar kind, relating to those who did, and those who failed to do their duty. A newspaper discussion has also taken place between Mr. Dorian, the third officer, and J. Collins, Jr., and it is reported that the former has been ostracised by the Company, because he published statements relative to the brandy and liquors being broken into and drank on board of the *Arctic*. We hope there will be an investigation, and it appears to us that Mr. Collins has no interest to opposed it.

The Patent Office.

WASHINGTON, Dec. 1st, 1854.

MESSRS. EDITORS—I have been given to understand that the Commissioner of Patents—Judge Mason—will recommend in his Report important changes in the Patent Laws, especially in relation to an increase of the Patent Office revenue. The number of applications during the year will probably reach the number of 4000, and that out of these 1600 patents will have been granted, as the columns of the SCIENTIFIC AMERICAN will show. The expenses of the Office have, of course, been increased by the appointment of additional examiners, by the addition (by Congress) of 20 per cent. to the salaries of all officers and clerks, messengers, &c., and by furnishing the rooms in the extension of the Patent Office with the necessary carpets, desks, chairs, tables, &c. The revenue of the Patent Office has not been equal to the expense, and about $10,000 of debt has been incurred. I hope that whatever change may be made in the Patent Laws to increase the revenue of the Office, that it will be an increase of the patent fee simply and no more. Inventors would rather pay $40 to have their cases examined at an early date, than pay $30 to wait for some months, as was the case during previous years. The complication of fees, as in the law before the Senate last winter, was a great defect. The Patent Office is now in a very efficient state, and does great credit to the present Commissioner. C. C.

New England Railroads.

A large proportion of the New England Railroads, particularly those running into and through Vermont and New Hampshire, have resolved upon an advance of 20 to 30 per cent. on their passenger fares, to take effect Dec. 1st. The advance of the Connecticut River Road is 20 per cent., and makes the through and local fares at the same rate, and that three cents a mile. The connecting roads north, and the Vermont and Massachusetts advance 30 per cent. These are already about three cents a mile, save the through fares of the Western.

Some parts of our Southern States have been visited very early this season with hoar frost.

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Treatment of Lead, Silver, and Copper Ore.

The electro-chemical process consists in preparing the ores in such a manner that the resulting compounds of silver and lead (in operating upon galena) may be soluble in a saturated solution of common salt; these compounds are chloride of silver and sulphate of lead. When the solution is made, it is put into a wooden reservoir, when the decomposition of the metallic salts is effected with couples formed of plates of zinc and tinned iron or copper, of masses of calcined charcoal, or even of plates of lead and the same negative elements. The plates of zinc or lead are placed in bags of sail-cloth filled with a saturated solution of salt, which are immersed in the metallic solution; the other plates are put into the latter, and the communication established between them by means of wires.—With plates of zinc a deposit of very fine particles of all the reducible metals is obtai ed on the negative plates; with lead plates the deposit consists of silver of greater or less purity, according to the proportion of lead in the solution. Wooden boxes, of a few millimeters in thickness, steamed for the removal of soluble extractive matters, are better than the sail-cloth bags; or porous earthern vessels may be employed, filled with fragments of amalgamated zinc and mercury.—The action is then more regular, and the quantity of zinc consumed is in atomic proportion with that of the deposited metals. By varying the constitution of the voltaic couples, each of the metals contained in the solution may be successively separated.

Experiments have been made upon quantities of ore varying from 100 grms. to 100 kilogrms.; the quantities of silver collected in twenty-four hours varied from a few decigrammes to one or two kilogrms. In general the operation was completed in about four-and-twenty hours; but with the assistance of a separate battery, of which the temperature was raised by means of steam, about a fourth of the time was saved. This battery is of course united voltically to the other apparatus, and in this case the latter consists only of lead plates, of which some form the positive, others the negative elements of the pile; and although the lead acts directly upon the chloride of silver, the two opposite currents resulting from this action do not appear to injure the effects of the independent battery. This method combines the advantages of the direct precipitation of silver by the lead, and those resulting from the action of the separate battery, which converts each apparatus into a voltaic couple. When lead plates are em ployed, the fluid after several operations contains chloride and sulphate of lead, which are decomposed by lime.

The lead deposited on the negative elements is in very fine particles or in a spongy form; after being washed and pressed together, it is melted in earthern crucibles, covered on the surface with powdered charcoal to prevent oxydation; several hundred kilogrammes of lead have been fused in this manner. This precipitated lead is pyrophorous; it must not therefore be exposed to the air in drying, as in this case it would become oxydized with disengagement of heat. It is then in a most favorable state for the production of white lead.

The process has been tried on a large scale by M. Duport Saint-Clair, a Mexican silver refiner; and he considers it to be applicable to the working of silver ores, not only in case of a positive want of mercury, but even when the price of that metal becomes rather high. —[M. Bequerel in *Comptes Rendus*.

A Great Gun.

Some experiments in gunnery have been made recently at the Washington Navy Yard. The object was to test the metal(cast-iron) of which a heavy piece of ordnance is constructed, with a view to its adaptaton to the navy. The gun is the largest in the country, with a bore of 11 inches, and weighing 16,000 lbs. Upwards of one thousand and forty rounds have been fired thus far—generally thirty a day. Fifteen pounds of powder serves for a single charge, and the shot average each one hundred and sixty-eight pounds. Twelve men are required to work this mammoth piece of artillery. The effects of each discharge on the metal are carefully noted.

Is the Human Stature Diminishing.

The *Scottish Guardian* says, "It is a very common opinion, that in the early ages of the world, men in general possessed superior physical properties, and were of a greater size than they are at present; and this notion of diminished stature and strength seems to have been just as prevalent in ancient times as at the present. Pliny observes of the human hight, that 'the whole race of mankind is daily becoming smaller,' an alarming prospect if it had been true. Homer more than once makes a very disparaging comparison between his own degenerate cotemporaries and the heroes of the Trojan war. But all the facts of the circumstances which can be brought forward on this subject, tend to convince us that the human form has not degenerated, and that men of the present age are of the same stature as in the beginning of the world. In the first place, though we read both in sacred and profane history of giants, yet they were at the time when they lived esteemed as wonders, and far above the ordinary proportions of mankind. All the remains of the human body (as bones and particularly the teeth) which have been found unchanged in the most ancient urns and burial places, demonstrate this point clearly. The oldest coffin in the world is that found in the great pyramid of Egypt; and Mr. Greaves observes that this sarcophagus hardly exceeds the size of our ordinary coffins, being scarcely six feet and a half long. From looking also at the hight of mummies which have been brought to this country, we must conclude that those who inhabited Egypt two or three thousand years ago were not superior in size to the present inhabitants of that country. Lastly, all the facts which we can collect from ancient works of art, from armor, as helmets and breastplates, or from buildings designed for the abode and accommodation of men, concur in strengthening the proofs against any decay in nature. That man is not degenerated in stature in consequence of the effects of civilization, is clear, because the inhabitants of savage countries, as the natives of America, Africa, Australia, or the South Sea Islands do not exceed us in size."

Floating Batteries for the Baltic—Shot-Proof Iron Plates.

The British Government has entered into a contract for the manufacture of about 2,000 tuns of enormous slabs or plates made of the best scrap iron, with which powerful floating batteries are to be covered, so as effectually to render them proof against the heaviest shot the Russians can throw. These plates vary from 8 to 12 feet in length, are from 21 to 36 inches broad, and about 4½ inches thick. Each plate will weigh from about a tun and a half to three tuns; and, after being fitted, they are to be bolted to the outside of the floating batteries. From experiments carefully made, it appears that iron plates of the scantling here mentioned not only resist the heaviest shot, but break them in pieces when they strike. So urgent are the authorities to have the batteries ready for active operations against Russia in the spring, that the contract has been divided amongst the principal makers in Glasgow, Newcastle, Lowmoor, and other places in the North of England.

The operation of making these huge plates is curious. In one corner of the yard is a huge pile of scrap iron of all sorts, but including a vast quantity of circular pieces punched out of the rivet holes of boilers and iron ships; and also clippings from iron plates. After being freed from rubbish, they are carefully piled on plates of old thin sheet iron, about a foot long, 10 inches broad, and 5 inches high; the largest bits being placed round the margin and the little pieces in the center. In this state the pile is put into a reverberatory furnace, where it soon acquires a welding heat. It is then withdrawn and put under a tilt hammer called the shingling machine, where the whole is hammered into something like a homogenous mass. Several of these flattened lumps are piled on each other, heated again, and put under the same hammer, until the whole is welded together. Several of these larger masses are next subjected to the same process, until they assume the size and form requisite for being converted into a bar, a shaft, or a plate—only that when the lump of iron becomes too large for the ordinary shingling machine, it is forged under a steam hammer.

Recent Foreign Inventions.

JAPANNING LEATHER—A. V. Newton, of London, has secured a patent for opening the pores of leather by impregnating it with sulphur for the purpose of preparing it for enduring a great degree of heat and for toughening its fibers. The sulphur is combined with the varnish, and any gum elastic solution may be combined with it.

WATER PROOF STUFFS—P. A. Lecompte De Fontainmoreau, of London, patentee.—In carrying out this invention, one of the surfaces of the cotton, or woolen, or other stuff, has first to be raised with teasles, after which it is dyed the same color as the varnish which is to be applied. The composition is described by the patentee as follows:—"I introduce about eleven pounds of white lead, nine pounds of litharge, twelve of cuttle fish, and two and a quarter pounds of the acetate of lead into about ninety quarts of clarified linseed oil, made to boil slowly during six hours. This is colored by any proper oxyds, and may be diluted with turpentine. It is spread in a state of cold paste over the stuff, which must be well stretched in a proper frame. It is then set to dry in the open air, and it requires about four coats to render it fit to take on a printed pattern."

This is a preparation for printed oil cloths, and is said to be a good composition for making such fabrics. Our oil cloth makers do not take pains to have the primary coats made of proper substances for elasticity and wear, hence our people suppose that the English have a superior method of making such fabrics; the truth is, that it is not for want of knowledge that so much poor oil cloth is made, but a want of proper materials so as to make a cheap article.

PRESERVING TIMBER.—A. E. P. Le Gros, of Paris, has secured a patent for preserving timber and all kinds of organic matter by means of a solution of a double salt of manganese and lime, or of manganese and zinc, used either alone or with an admixture of creosote.

PREPARATION OF SKINS—John Taylor, of London, has taken a patent for the use of the brains of animals in the preparation of fine skins as a substitute for the yolk of eggs which is now used. The brains are dissolved in warm water, and the solution is then strained, after which it is used either alone or mixed with flour until it assumes a pasty appearance like the yolk of eggs. The quality of inferior kinds of skins are improved to render them fit for glove-making by placing them in a close vessel and forcing in a solution of animal brains with a pump, so as to force it through the pores of the skins.

We believe our American Indians use the brains of the animals which they kill in the chase, for the purpose of preserving their skins and rendering them fit for mocassins, &c.

MANUFACTURE OF SUGAR—C. Hustings Collette, of London, has obtained a patent for improvements in the manufacture of sugar, the specification of which we give somewhat in full, knowing how important a manufacture this is to a very large class of our readers.

This invention consists in an improved mode of treating cane juice, molasses, beet-root juice, and other saccharine juices and syrups, for the purpose of obtaining sugar therefrom, freed or separated from the impurities and other substances with which it is mixed.

It has been for some time known that the yield of sugar from cane juice, molasses, beet-root juice, and other saccharine juices, is smaller than it ought to be; and the cause of this small yield has been attributed to the use of a large quantity of charcoal, to clarify the syrup, whereby a considerable proportion of sugar becomes absorbed, notwithstanding the most careful manipulation; the molasses produced by many of the ordinary processes often containing nearly as much as 50 per cent. of crystalline sugar.

For the purpose of avoiding these evils the following process is employed:—The juices, molasses, or syrups (obtained by any of the usual means from the sugar cane, beet-root, or other plants containing saccharine matters) are introduced into the defecation pan, together with the quantity of lime or lime water necessary for producing defecation. About 30 or 40 per cent. of lime is sufficient for this purpose. As soon as the lime has produced the requisite effect upon the liquid, a sufficient quantity of superphosphate of lime is added to it, for the purpose of neutralizing the lime,—usually in the proportion of about 3 parts of the superphosphate of lime to 100 parts of the juice. The superphosphate of lime may be used at 4° Beaume's hydrometer, or at any higher degree; and it is to be added as long as any reddish litmus paper, dipped into the juice, is turned blue. Should too much superphosphate of lime happen to be added, this error can be rectified by the immediate addition of as much lime or lime water as the superphosphate of lime in the solution will neutralize. The mixture will, by the above process, become thick and turgid, and must be filtered,—which may be done in the ordinary manner through filtering bags; and the filtered juice or syrup is then to be concentrated to 18° Beaume—when it will again become turgid or thickened. For the purpose of separating any impurities which may still remain in the juice or syrup, superphosphate of lime is again added, so long as litmus paper, dipped in the juice, is turned blue, after which the mixture is again passed through the filter; and the filtered fluid thus obtained must be concentrated, so as to produce the crystallation of as much sugar as can be separated in this manner; and the vacuum pan and crystallizing tubs may be used in the usual way for this purpose. Sugar refined or purified in this manner, may be again dissolved or converted into syrup, and again submitted to the process, for the purpose of further purifying it.

The crystallized sugar, thus formed, is then to be separated in the usual way from the residual juice or syrup with which it is mixed.

From this residual juice or syrup, a further quantity of sugar may be obtained by the following process:—The juices or syrups are diluted to about 28° Beaume, with water, or with some sweet juice (the defecated juice of beet-root being preferred,) and lime or lime-water is added; and about half as much as was used for the first process will generally be sufficient to produce the requisite defecation. Heat is then applied; and before the syrup boils superphosphate of lime is added until the syrup ceases to produce any apparent alkaline action upon the test paper; and by these means the phosphate of lime will be precipitated. The syrup must then be filtered as before, for the purpose of separating it from its impurities; after which the filtered juice or syrup is to be concentrated and crystallized as before, for the purpose of obtaining from it a further quantity of sugar. Centrifugal machines may be used for separating the crystallized sugar from juices or syrups.

The second residual syrup obtained by this last-mentioned process may also be subjected to the same process as that just described for treating the first residual syrup, in order to obtain, as results, a further quantity of crystallized sugar to be separated from a third residual syrup, as before.

In the same manner the process above described may be repeatedly applied to each residual syrup, which may remain, after a previous process, until the syrup or juice operated upon shall be exhausted of sugar, or as much so as may be economically practicable.

[Since the English patent fees were reduced, the number of new inventions brought into public has been constantly on the increase.]

[Collated from *Newton's Journal*, *Mechanics' Magazine*, London, *L'Invention*, Paris.

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New Inventions.

Improved Lifting Jack.

The common lifting jack is simply a powerful screw working into a nut, and is only capable of raising a heavy body in a vertical direction. An improvement on the common jack has been made by N. B. Carpenter, and John Powers of this City, which consists in combining a slide plate in such a manner with the jack, that when the weight to be raised is elevated to its proper hight, the slide plate, which is placed under the weight to be raised, can be moved laterally, either to the right or left, by turning the screw, and thus heavy bodies can not only be elevated but moved laterally, without a second adjustment of the jack. This invention is well adapted for adjusting cars on railroads, and it is equally valuable for raising buildings, especially in all cases where they have to be moved horizontally as well as vertically.—Measures have been taken to secure a patent.

Improvement in Railroads.

Hiram Carpenter, of Rome, N. Y., has taken measures to secure a patent for an improvement in railroads, which consists in having either the rails or sleepers (or both,) attached to the top of cast iron posts, fitted within cast iron cylinders, firmly secured in the ground in any proper manner, the lower ends of the posts resting upon india rubber, or other suitable elastic substance placed within the cylinders. This is for the purpose of giving the rails of tracks that proper elasticity which is requisite for easy traveling, and which tends to save tear and wear in both rails and rolling stock.

Railroad Cars.

Wendell Wright, of this city, has taken measures to secure a patent for an improvement in railroad cars, which consists in rendering car bodies partially flexible by dividing them into sections, the joints thereof being covered by some suitable elastic material.—This improvement is intended to allow longer cars being employed on railroads, so as to insure greater safety and steadiness. The spaces between the joints of the sides of the car are covered with elastic cloth, which is rolled up on perpendicular rollers located at the edges of the joints, and at the foot of each roller is a coiled spring for actuating the same. There are also clasps which hold the edges of the cloth in place, and the tendency of the springs on the rollers is to wind up the cloth and present a tight smooth surface, which is always maintained. By uncoupling the clasps, the cloth is wound up, self-acting, on the rollers by the action of the springs, hence these spaces may be used for doors when desired.—The manner of clasping the cloths on the sides of the cars can also be applied to their ends, inclosing each pair, so as to exclude dust.

Grinding Mills.

An improvement in mills for grinding feed has been made by Amory Felton, of Troy, N. Y., which consists in the employment or use of a corrugated cylinder and a concave and cap having spiral flanches and reciprocating teeth. The grain to be ground is placed in a hopper above the corrugated cylinder, and is made to rotate, when the grain passes between the concave described and the cylinder, and is crushed between the spiral flanches of the concave and the corrugations on the cylinders, and is then discharged, ground, by an opening in the end of the concave. This mill is now in use, and grinds four bushels of corn per hour by one horse power. Measures have been taken to secure a patent.

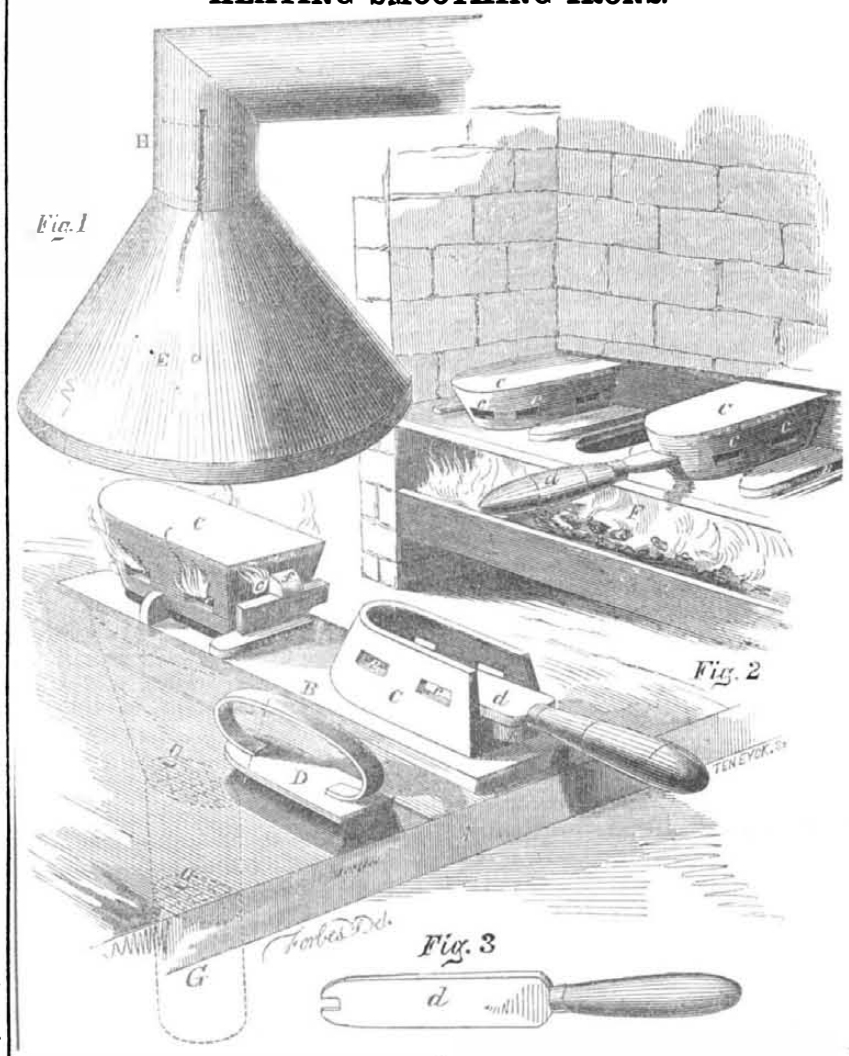
Steam Pumps.

Robert B. Gorsuck, of this city, has taken measures to secure a patent for an improvement in double acting steam pumps, which consists in admitting water under pressure into the suction ends of the pump cylinder in such a manner that the steam is assisted in throwing the steam valve, an easy motion given to the force and suction valves and the concussion attending the working of the plungers in ordinary steam pumps at the commencement of each stroke, is avoided.

Mr. Laughlin's Patent Car Brake.

A correspondent informs us that this brake is in successful operation on the Camden and Amboy Railroad, N. J., where it has been in use for the past two years. The invention is applied independently of the ordinary hand brakes, and is so arranged as to operate on all the cars simultaneously, at the will of the engineer. Our correspondent says he has seen a train consisting of five cars, when moving at a speed of thirty miles an hour, stopped within a distance equal to the length of the train.

HEATING SMOOTHING IRONS.



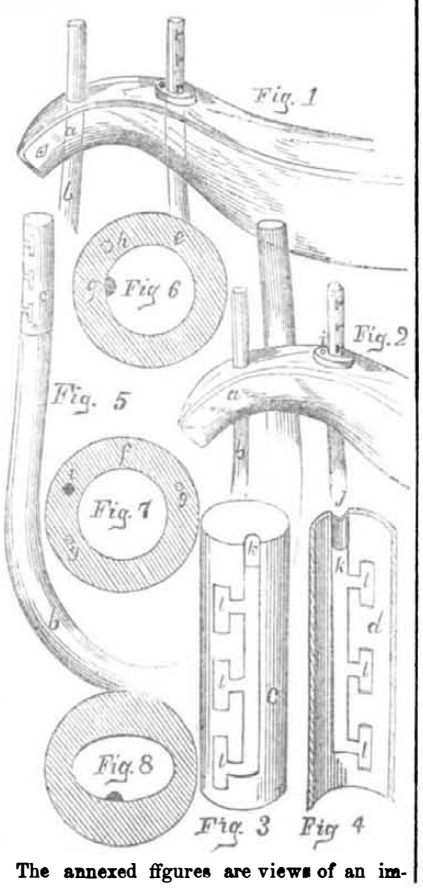
The annexed engravings are views in perspective of new irons, apparatus, and system for heating the irons, invented by L. W. Boynton, of this city, who has taken measures to secure a patent for the same.

Figure 1 exhibits the method of heating the irons by gas flame; figure 2 by a coal fire, and figure 3 is an instrument for handling and turning over the irons.

E is a sheet metal hood for carrying off the products of combustion through pipe H. The pipe, H, is stationary, but the hood, E, is capable of being slid up and down by chain, *e*, on the pipe, so as to set it at any distance above the fire; G is the gas pipe, it passes up under the fire hearth and has sheets, *g*, of wire gauze in its throat, to spread the gas to give out a greater degree of heat. A is the hearth, and B the fire plate, in which there may be one or more openings for the gas in flame to pass through, and on which the irons are to be placed to be heated; C C represent hollow irons, they are made with openings, *c c c*, in their sides, and at one end, and being hollow on one side, with the face for a cover, each iron is laid upon an opening in the fire plate, B, and the openings, *c c*, become chimneys. As shown in fig. 1, the iron, with its hollow top part, is ready to receive the cold handle, D, when the instrument, *d*, is withdrawn, after which the operator takes away his iron and uses it. All the heat of the fire must pass through the irons, owing to the way they and fire-plate, B, are constructed, and thus a great economy is effected, whether gas or coal heat be employed. The gas is the cleanest and most convenient method of heating when it can be obtained, but the query has been to use it in such a manner as not to be too expensive. This Mr. Boynton has secured by this invention. Air is mixed with the gas so as to afford it an abundant supply of oxygen. The small catch, *f*, is to secure the handle, D, firmly in its box, and close up the end of the iron. The fire in fig. 2 is represented open, but this is only to show where it is, as the whole front is inclosed; the air passes up below, and the flame and heat pass through the irons. The hearth is below the mouth of the chimney like a blacksmiths forge, or the waste heat may pass up through a tubular steam generator situated above, to supply warm water and steam if the latter is required. This method of heating irons may be employed by fur hat and straw hat pressmen, in laundries, by tailors, and in families.

More information may be obtained of Mr. Boynton, at No. 251 Broadway, this city.

Improved Ox Yoke.



The annexed figures are views of an improvement in Ox Yokes, for which a patent was granted to Hemon B. Hammon, on the 16th of last May. The nature of the invention consists in securing over the ends of the ferrule, *c*, fig. 3, and securing the bow in the beam, *a*, fig. 2, with the washers, *e* and *f*, figs. 6 and 7.

a a is one-half of the yoke beam made in the usual manner, showing the bow, *b*, secured in the yoke beam by the ferrule, *c*, and the washers, *e f*. *c*, fig. 3, is a view of the ferrule before it is seeured to the bow. *d*, fig. 4, is a longitudinal sectional view of the ferrule. *k* is a groove to receive the projection, *g*, of washer, *e*. *j* is a concave in the upper end of the groove, from three-eighths to one inch in length, to prevent the top of the ferrule from spreading apart when the ferrule is on the bow. *l l* are apertures, two or more, to receive the projection, *g*, after it has passed down the groove, *k*. The apertures, *l l*, and projection, *g*, are to hold the bow in the yoke beam, as at *a*, fig. 2. The object of having one, two, or more apertures in the ferrule, is to suit it to any sized necks. *e* and *f* are views of the washers. *h* is a hole through the washer to receive the pin, *i*; the pin, *i*, and hole, *h*, is to prevent the washer, *e*, from being disconnected from the ferrule, *c*, if by accident the bow should be raised up through the yoke beam, as shown in fig. 1, and the washer, *e*, should be raised out of the lower part of the aperture, *l*, as shown in fig. 1.—*g g* are screws to firmly secure the washer, *f*, to the top side of the yoke beam; *m*, is a screw to secure the ferrule to the bow. Fig. 5 is a view of the bow with the ferrule attached.

It will be observed that the washer, fig. 8, has an oblong opening in it; this is to make it adjust itself to a yoke, the surface of which is either straight or hollowed, as in the old-fashioned kind. The claim of this patent is for the combination of the ferrule, *c*, or its equivalent, and the washers, *e* and *f*, for fastening ox bows, as thus illustrated and described.

More information respecting this improvement in ox yokes may be obtained by letter addressed to the patentee, Mr. Hammon, at Bristolville, Trumbull Co., Ohio.

Machinery for Making Cut Nails.

There has been some dispute respecting who was the first inventor of machinery for making headed nails, and the invention has been claimed for Perkin & Ellis, who erected machinery in 1810, for making them. A letter from R. French, son of the first inventor of American reaping machines, informs us that his father obtained a patent for making nails with heads by machinery, which machine was in operation in 1804. It was driven by a small water wheel, and was in all respects similar to those now in common use, excepting that it formed the head with two hammers instead of pressure. The heads were in form like those of the old hand made nails, and in every sense this machine was successful. Its author, however, like many other worthy inventors, who have bequeathed valuable gifts to posterity, was unfortunate in business, and his patent rights were invaded with impunity, because there was not that protection afforded inventors by the law in those days, as can be obtained at the present time.

Brick Machines.

An improvement in brick presses has been made by Henry Young, and assigned to Reuben Culp, of Degraff, Ohio. It consists in so combining a molding and pressing apparatus with the pug-mill, that the clay is forced ed by the arms of the latter out of an aperture in its bottom into a suitable charger, where it is pressed by a follower into the brick-molds. A suitable mold carriage is also provided to move in and out laterally beneath the charger, in correspondence to the movement of the follower.

We notice by some of our exchanges that a metallic pen has been invented in Paris composed of copper and silver, which is said to produce an electric current by the moisture of the hand. This pen is much required by many writers.

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Scientific American.

NEW YORK, DECEMBER 9, 1854.

Wool and Woolen Manufactures.

Two weeks since we noticed the tribute of respect which had been paid by the State of Tennessee to Mark R. Cockrill, Esq., for his devotion to the developement of the agricultural resources of that State, especially wool-growing; and as this is a subject which demands more general attention than it has hitherto received, a few words upon it at the present time seem to come up in their natural place. The cold weather of "dreary winter" is fast encircling a large extent of our country; the gray wild goose has left the northern lakes and streams, for the warmer regions of the sunny South; the forests are denuded of their green foliage; the white snow caps the mountains, and the hoar-frost the plains. The grass crisps cold beneath the woodman's feet as he goes forth in the morning to his daily toil, and the very smoke from the chimney of the distant log hut rises in lazy white columns like cold snow wreaths. The blazing fire is now a flower garden; its red embers are the roses, and its white rich flames, the lillies of the parterre. How comfortable now is thick woolen garniture for the outer man, to face the cold blast by day; and how cozy it feels to be shrouded up in the soft thick white blankets by night; in cold weather the very sound of wool is euphonious. There can be no doubt but warm clothing is as necessary as food for health during winter, and no fabrics can compare in all respects with those made of wool for this purpose. But although we have extensive regions, unsurpassed by those of any other country for wool-growing, we have in a great measure despised them, hence our flocks and herds are not in proportion to our domain, and our woolen manufactures are as yet but few and feeble. This should not be, and we trust it will not be so for many years. The United States is the greatest cotton growing country in the world; all the others put together are but dwarfs in comparison, and why should it not be so with wool. In a country such as ours, with a population of twenty-five million, and an extent of territory of more than three million square miles, there are only three hundred and forty-four wool dealers; one thousand and seven woolen manufacturers, and but three thousand two hundred and sixty-six combers and carders. We should have ten times this number, and it is a shame to us that we have not. It is a positive fact that the value of the sweet potatoes raised in our country annually exceeds that of the wool crop, the former being $19,134,075, and the latter but $15,755,087 (the cotton product looms up to $98,603,720.) No substance has ever been discovered to supersede wool for making fine textile fabrics. It is at once the most beautiful, enduring, convenient, warm, and healthful, and when it is considered that our country is adapted to raising the finest kinds of wool—that it obtained the first prize in London in 1851, in competition with the whole world—surely the present state of our woolen manufactures, and the cultivation of wool as a crop, deserve censure from ourselves. We believe it possible for wool to be raised much cheaper than it now is, especially in the hilly regions of the Southern States; and with improvements in its manufacture, we believe that the price of all kinds of woolen fabrics might be greatly reduced. This would be a national blessing; it would bring comfort and health to thousands of the poor, and add to the comforts of the rich. There is a wide field open for the cultivation of the wool crop in our country, and for the extension and improvement of its woolen manufactures? will our agriculturalists and manufacturers devote more energy and devotion to accomplish these objects, for, instead of importing as we now do the finest qualities of woolen cloths from Belgium and England, we should be able to export finer qualities to those countries.

Patent Pin Papering Case.

We have just received the printed decision of Judge Ingersoll, in the case of the American Pin Company, complainants, and the Oakville Company and others, defendants, for the use of a machine for papering pins, which was tried in the U. S. Circuit Court, at Hartford, Conn., in September last. The bill was filed by the complainants to restrain the defendants from using the machine for papering pins, for which a patent was granted to Saml. Slocum, Sept. 30th, 1841, said machine also combining the improvement of John J. Howe, patented Feb. 24th, 1843, they being the assignees of both of these patents. We can only give an abstract of the decision, but as it is a very interesting case, we present its substance so as to give a complete understanding of it.

The defendants did not question the validity of the two patents specified, but set up the defence of non-infringement, and claimed a right to use their machine, as being entirely different in its nature and operation, and was the invention of Chauncy O. Crosby, for which a patent was granted on April 1, 1851. The invention of Slocum is described in his specification as "a machine for sticking pins into paper in a row," and consists of a horizontal plate, in which are as many grooves, each just long and deep enough to receive one pin, as the number of pins in a row—a sliding hopper which holds a number of pins, (one directly above the other and horizontal,) and which is made to slide over the grooves, depositing one pin in each by gravitation—and a sliding plate or follower, upon the front of which are wires corresponding to the grooves, and which enter the grooves and drive the pins through the paper, which has been previously and separately crimped, and is held between clamps.

Howe's improvement consists in making transverse notches in the jaws of the old crimping apparatus, so that the pins could be driven by the wires through the paper while it was in the process of being crimped, instead of after it had passed out of the crimping jaws.

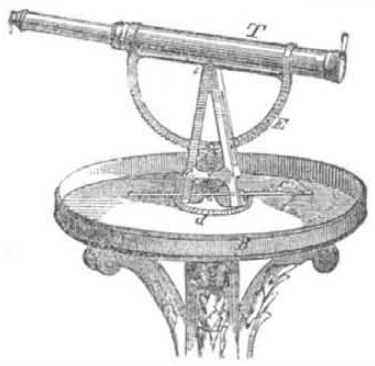
Before this improvement no method was known by which the pins could penetrate the paper and thus be sheeted while the paper was undergoing the crimping action.

The machine of Crosby, which the defendants were using, is claimed in the patent to be a new and useful machine. The claim was not for an improvement on Slocum or Howe's machines, but an independent machine, producing a like result but by means entirely different from Slocum and Howe's. The Court held that the patent of the defendants was *prima facie* evidence that his machine was different from plaintiffs, who, to succeed in their application, must counteract such evidence by countervailing testimony.

Crosby's machine sticks the pins into a fillet of paper transversely, the paper being crimped lengthwise, and when stuck, coiled into a roll, so that the heads of the pins are represented on the disk of the roll. It consists of an inclined channel-way formed by two bars, down which the pins slide one after the other, hanging by their heads between the two bars. At the bottom of this channel way is placed one end of a revolving screw, which at each revolution takes in its thread one pin from the channel way, and by the mechanical force of the revolution carries it to the other end of the screw, and having changed it from a vertical to a horizontal position, then drops it into a groove. As fast as each pin drops, a punch at the head of it drives it through the crimped fillet of paper, which has passed out from between the crimping rollers, and is held rigidly, one end by the crimping rollers, and the other by the coiling roller, which coils the paper into a roll as fast as it is stuck. This machine is automatic, while the others are not so.

The Court therefore decided that the means used in the defendants' and the plaintiffs' machines were entirely different inventions, although they accomplished the same result, and according to the decisions of the U. S. Supreme Court in the case of O'Reily versus Morse, viz., "any one may lawfully accomplish the same end as that described in a patent without infringing it, if he uses means substantially different." In other words, it confirms the true doctrine of patents advocated in our columns, before the decision referred to was made, namely, it was the "means" of securing a useful result in a machine, which constituted the invention, not the result itself, for which see page 67, Vol. 7, SCIENTIFIC AMERICAN; the opinions there expressed have become the rule in the U. S. Courts. It was therefore decreed in this case that the complainants bill be dismissed with costs. Judge Nelson, of the Supreme Court concurring in the opinions and decision of Judge Ingersoll. The attorneys in this case were C. M. Keller, of this city, and Gov. Baldwin, of Connecticut, for plaintiffs, and Mr. Stoughton, of this city, and R. I. Ingersoll, of Connecticut, for the defendants.

Stationary Spy Glass.



This figure is a perspective of a stationary spy glass or telescope, by George Blanchard, of Brooklyn City, who, having designed a mechanical contrivance for mounting such an instrument, has presented it as a subject of interest to the readers of the SCIENTIFIC AMERICAN. The object of the invention is to make a spy glass used in an observatory, or on an elevation, for viewing the surrounding country, more easy in its handling and more certain in its workings.

A circular table, B, about three feet in diameter, is firmly secured in the center of an observatory, its upper surface made level and so prepared that the names of objects or places may be written or printed upon it, and this may be surrounded by a rim several inches high to protect it from injury. In the center of the table is fixed a metallic circle nearly a foot in diameter, graduated about its outer edge similar to the circle of a transit instrument, and is to be used to find the bearings of any distant object. Upon a corresponding circle, *d*, a little less in diameter, and made to turn upon an axis in the common center, is fixed the framework, F, that supports the spy glass, T. This framework may be like that of a transit instrument, and of such a hight that the table below will not interfere with the elevation or depression of the glass, which is secured to a vertical half-circle, E, having its axis at the top of the frame, and being of such a radius that the arc, measured from its necessary elevation above the horizon to its greatest depression below, shall nearly equal the distance from the circumference of the graduated circle on the table to the rim. The arc, E, of the vertical limb is furnished with cogs, to work in a small wheel below, having a milled head on the outside by which the vertical range may be regulated. Across the center of the circle or plate on which the frame is fixed, is placed a straight bar or rod, *c*, about two feet in length, with a rack upon its upper side, and secured by guides, so as to move backwards in the direction in which the glass, T, points; this is the indicator or pointer of the instrument.—The space between the rack upon the pointer and the small wheel with the milled head, is filled by a cog-wheel of sufficient diameter, so that the pointer is thrown forward when the glass is elevated to view a distant object, and drawn backwards when depressed to view one nearer. And when a good view is obtained of any object, and a mark made upon the table at the extremity of the pointer, the glass may be brought to bear upon the same object again by bringing the pointer over its mark or name on the table. The vertical motion is produced by turning the wheel with the milled head; the horizontal, by moving a rod reaching from the framework to the rim of the table. The spy glass may be provided with cross lines, and the graduated circles with verniers, for more accurate observation. The table, when completely registered, would be a map of the surrounding country, and its objects of interest could be found and viewed with ease, even by a stranger. This is only a simple description of the instrument; those interested in such matters will perceive that it may be applied to many valuable purposes not named.

The Effects of Fires on Business.

It it a remarkable fact, that the present depressed state of business resembles that of 1837, and seems to have succeeded very similar events. Thus, the great fire in this city took place in December 1835; and the next season—1836—was a very unfruitful one; after which came the flour riots the succeeding winter, dear provisions, a perfect panic in the money market, and a prostration of all regular business. During the past year the losses paid by Marine Insurance in this city alone exceed $12,000,000, while the losses by fires and storms on land have not been less than $18,000,000, and to crown all, the crops (as in 1836) failed in many extensive districts of our country. We cannot but consider that the great amount of property destroyed by fire is a powerful element in detracting from the wealth of our country—thereby tending to retard its progress and make our people poorer. If we allow that only $10,000,000 per annum have been destroyed by fire since 1836, and this we think is not above the average amount, the sum total is $180,000,000 of solid wealth destroyed in that period—18 years. Houses, goods, and grain, are solid wealth. Insurance companies do not economise the wealth of our country; the payment of insurance money for property consumed by fire does not bring back that property to the community; it is gone, and never can return. It appears to us that the accumulation of the great losses by fires experienced in our country must affect all kinds of business, and this we think has been overlooked by those papers which have been commenting upon the causes of the present depressed state of business. We say that it is only one element of loss, but a very important one, and we fondly hope that this view of the question may lead to the adoption of more efficient remedies for the prevention of fires.

To Make Soft Water.

A correspondent of the Maine *Farmer* states that a teaspoonful of salt thrown into the water, will soften from three to four pails of hard water. This is a valuable recipe for housekeepers, and one which may be easily tested.—[Ex.

[If the above had said "sal-soda," instead of salt, it would have been correct.

At one period before the Revolution, England imported iron from this country amounting to 7,525 tuns per annum, this was more than one-sixth of all the iron then imported by England.

$570 IN PRIZES.

The Publishers of the SCIENTIFIC AMERICAN offer the following Cash Prizes for the fourteen largest lists of subscribers sent in by the 1st of January, 1855.

$100 will be given for the largest list,
$75 for the 2nd, $35 for the 8th,
$65 for the 3rd, $30 for the 9th,
$55 for the 4th, $25 for the 10th,
$50 for the 5th, $20 for the 11th,
$45 for the 6th, $15 for the 12th,
$40 for the 7th, $10 for the 13th,
and $5 for the 14th

The cash will be paid to the order of each successful competitor; and the name, residence, and number of subscribers sent by each will be published in the SCIENTIFIC AMERICAN, in the first number that issues after the 1st of January, so as to avoid mistakes.

Subscriptions can be sent at any time and from any post town. A register will be kept of the number as received, duly credited to the person sending them.

☞ See new Prospectus on the last page.

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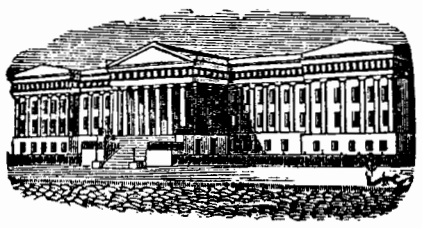

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING NOVEMBER 28, 1854.

HAY AND COTTON PRESSES—Alden Adams, of Jerseyville, Ill. : I do not claim the general device of mounting the pressing box upon a frame work and rollers, in order that it may run under the follower and be withdrawn upon rails.

But I claim the combination of the rails, h, mounted upon india rubber or its equivalent, with the block, x, so that during the descent of the follower the rails will be easily depressed, and frame and rollers relieved of the pressure which will be borne by the block, and during the rise of the follower the rails will also rise and lift the frame and pressing box up from the block ready to be wheeled away.

ARRANGEMENT OF DEVICES FOR APPLYING POWER TO FIRE ENGINES—G. Backstein, of Philadelphia, Pa. : I claim therein the peculiar arrangement of the pulling levers, A, chains, L L, cross heads, piston, and cylinder, when used as described and applied to the working of a fire engine, as set forth.

TOWEL OR CLOTHES HORSE—John Cram, of Boston, Mass.: I claim the specified mode of making a clothes horse, or in other words, the combination of hanging frames, A B C C', with their jointed connecting bars, D E, D' E', and one or more tension racks, G, or tension racks and the upright frame, F, or their mechanical equivalents, all jointed together and made to fold up or to unfold and be used, substantially as specified.

CLOVER HULLERS—A. B. Crawford, of Wooster Ohio : I do not claim the peculiar construction of the rubber and case, neither the feeding in at each end and discharging at the center, as these were patented by me in 1844. Neither do I claim the invention of the screw or spiral flute or the wedge.

But I claim the feeding apparatus, substantially as set forth.

SEATS FOR PUBLIC BUILDINGS—Augustus Eliaers, of Boston, Mass.: I do not claim the device of tilting the seat by means of weights or other mechanical equivalents, because by a recent investigation I have found this to be quite an old device, it is found in the mechanical arrangement for operating the tilting leaf of the French writing desk, which, when not in use, is in a vertical position, making a part of the entire plain front of the desk or secretary, and when in use it is in a horizontal position for the support of the writing materials and the arms of the writer, its inner edge abutting against a rail in the vertical part of the secretary, in the same manner as the seat rests against the under side of the back of my chair, and this desk leaf is balanced or hung with weights and tilted by them in a manner which is very generally understood, for this reason I especially disclaim the tilting of the seat by means of weights, &c.

But I claim actuating the back by the dropping of the tilting seat, so as to bring it into an upright position by meaus of the curved arms attached to or forming part of the frame work of the back, and acted upon by the rear edge of the seat or a shoulder in the same, as set forth.

FEATHERING PADDLE WHEELS—Fletcher Felter, of Perth Amboy, N. J. : I claim the combination of the cranked shafts with the vibrating rods and cam-shaped tracks in the wheel house, whereby said partial rotation is obtained in a simple manner, as set forth.

CONVERTING RECIPROCATING INTO ROTARY MOTION—C. B. Gallagher, of San Francisco, Cal. : I am aware of the prior invention of Charles A. Watson, for improvement in rotary motion, patented Aug. 1st, 1838, and that the impracticability of the same consists in the great friction caused, and necessary power required to disengage the teeth of his rack from the wheel, which in mine is obviated, and the great weight of the frame and two racks which would be too heavy a strain on the piston at the end of each stroke, in my mode I only have the one rack attached to the piston rod, the frame standing still.

Fiually, I do not claim his invention or any other of similar character which have been invented prior to my own, but simply my mode of combining the different parts of machinery to effect the desired purpose, as explained.

I claim the above mode of applying steam power, caloric, or any other motive power that may use the straight cylinder, to machinery in place of the crank, as explained, reserving the right to vary the construction of the same to suit the different kinds of engines without changing the principle of invention, as explained.

ROTARY COOKING STOVE—E. A. Hibbard, of Winchester, Va. : I claim combining or arranging the reverse manner of draught, the elevating and receding grate, the return flue, the diving and ascending flue, the angular plates for burning coal, and the rotary top, in manner, form, and contiguity with each other, as set forth.

KNITTING MACHINES—Joseph Hollen, of White Township, Pa. : I claim upon my knitting machine patented 16th July, 1850, the combination of the series of projecting teeth, t t t, etc., with the series of needles arranged and operating as set forth, for the purpose of regulating the stitches and making them even.

I claim the depresser, n, so constructed with its inclined sides as to secure the entrance of the barb into the groove of the needle in case the needle should vibrate or be bent, as set forth.

I claim the separator, arranged and operating as described, for holding the thread back out of the way of the stitch.

I claim the tramper, arranged and operating as described.

I claim the thread depresser, d, arranged and operating as described, in combination with the thrust of the needle.

I claim the vibrating feeder arranged and operating as set forth.

MOLDS FOR PRESSING BONNET FRONTS—W. E. Kidd, of New York City : I do not claim a conical mold, as this has before been used, but I am not aware that a mold with the curved opening, g, covering all the front, of whatever size, but the very ends by which the workman guides the strips, has ever before been used.

Therefore I claim the method described, of constructing the disk, e, with the curved opening, g, in its side for the purpose of enabling the workman to guide and steady the material, of which the front is composed, whatever the sized front may be, substantially as specified.

STEAM BOILERS—D. B. Martin. of Washington, N. J. : I do not claim vertical tubes in boilers connected with water spaces above and below, except under an arrangement like that set forth, viz., where the lower water space is immediately over the fire, and the draught of the furnace returns over said space and among the tubes, as set forth.

That is to say, I claim the arrangement of the series of tubes placed vertically or nearly so between an upper and a lower and connecting vertical water spaces, when said lower water space is made directly over the fire chamber, and the draught is returned over said lower space and among the vertical tubes, in the manner set forth.

TANKS AND CISTERNS FOR SUPPLYING LOCOMOTIVES—A. W. McDonald, of New Creek Depot, Va. : I claim, first, a water tank, from which to supply locomotive steam engine boilers with water, so constructed that it may become, at the will of the engineer in charge of it, an exhausted receiver, as the water is pumped out of it by the engine, and when so exhausted may be replenished through the pipes, hose, &c., with which I provide it, or other equivalent mechanical agents, either when at high speed upon its way, or when brought to a halt, as explained.

Second, an improvement upon the tank or tanks now in common use (for the supply of locomotive steam engine boilers with water) by providing them with what I have called a tank pipe, trough pipe, guide wheel, and controlling cord or other equivalent mechanical agents or aids, and operated as explained, by which such tanks may be replenished while moving at high speed from my cistern, as explained.

Third, a new and improved road side cistern, constructed as explained or in any other equivalent mechanical arrangement to attain the same end, and located, as described, in relation to the tank to be replenished, from which any tank of the construction now commonly used, with my improvement, as claimed and described, attached as well as my own tank, described and claimed, may be replenished whilst passing said cistern at high speed, and my own tank, if in an exhausted state, may be replenished either when under way at any speed, or brought to a halt by the side of said cistern.

Fourth, my own tank, in connection or combination with my cistern, as the two have been explained and claimed respectively.

Fifth, my improved tank, or in other words, the tank or tanks in common use improved, as explained and claimed, in connection or combination with my cistern, as they have been respectively, and in connection or combination with each other, as explained and claimed.

STOVES—J. L. Mott, of Mott Haven, N. Y. : I do not claim either the ovate form, the separate sections, separate rings, or extended flanches, all having been used in stoves heretofore constructed by me, but not in combination.

Nor do I claim an extended rim around the stove, this having been before used at the bottom of the fret work or outside casing of the fire pot, on line with the grate, for the double purpose of securing the casing, and as a rest for the feet.

What I claim is the extended rim or clothes protector, as described, located and combined with the larger diameter of the fire chamber, that it may serve as a protector to prevent burning clothes, when carelessly passing, as set forth.

METAL RODS AND TUBES—James Newman, of Birmingham, Eng. Patented in England March 23, 1854 : I do not confine myself to the precise details mentioned, so long as the main features and particular nature of my invention be retained.

But I claim the production of metallic rods, rails, and bars, having the appearance of solid metal with a core or center of sand, sandy, earthy, ashy, or other arenaceous material, in the manner set forth and described, and of metal tubes, by afterwards boring or drilling out the core or center, as set forth.

BREECH LOADING FIRE-ARMS—A. D. Perry, of Newark, N. J. : I do not wish to be understood as claiming the position of the fulcrum or center of motion, as applied to breech pieces generally.

Nor do I claim a revolving breech piece except under an arrangement and combination, as set forth.

Therefore I claim as my improvement in breech-loading arms, the employment of the revolving segmental breech having its center of motion below, and in the line of the face of the breech of the barrel, and a central plug to fit the bore of the barrel, so that when the breech piece and breech of the barrel are brought together they shall fit in the manner, and for the purposes set forth.

I also claim in combination with said breech piece the levers, g h i, arranged and operating as set forth.

I also claim, in combination with said arrangement or system of levers, g h i, the recess, k, in the stock of the arm, in the manner and for the purposes set forth.

MACHINE FOR BORING THE CHAMBERS IN THE CYLINDERS OF FIRE ARMS—E. K. Root, of Hartford, Connecticut : I claim forming the chuck with a circular eccentric plate having a recess to receive the block of metal to be drilled or reamed, or either, combined with the body of the chuck, and with a bolt or its equivalent, substantially as specified, so that by turning the said eccentric plate on the body of the chuck, the several holes to be drilled, bored, and reamed, or either, can be successively brought and held in line with the axis of rotation of the mandrel, as specified.

I also claim, in combination with the said eccentric plate of the chuck, the radial sliding gripes operated by the conical surface of the screw ring, substantially as specified, for holding and liberating the block of metal by simply turning the said ring, by means of which the block can at all times be held in the center of the concentric plate, as specified.

I also claim the described eccentric chuck in combination with the series of sliding tool carriers arranged in a circle, substantially as specified, so that by turning the series, the several tools can be brought successively in a line with the axis of the mandrel, as specified.

PIANOFORTE ACTION—D. H. Shirley, of Boston, Mass. : I claim giving the blow. to the hammer and keeping it always in readiness for a blow, by means of the vertical arm, e, and diagonal arm, F, actuated by the butt, l, as described.

I also claim so arranging the back catch as to actuate it by the return of the block on the end of the diagonal arm after each blow, as set forth.

MOLDS FOR PRESSING BONNET FRAMES.—Nathaniel Spence, of New York City : I claim the arrangement of the metallic die and counter die, with their respective heaters, whereby the dies can be removed without disturbing the heaters, or the heaters removed or changed without opening the dies, the whole being arranged substantially as set forth, for pressing and drying bonnet frames. as described.

LOOMS FOR WEAVING BAGS—William Talbot, of Sanford, Me. : I am aware that bags have been woven on what is termed a plain loom, the same having been effected in the manner as exhibited in the specification and drawings of the invention of Cyrus Baldwin, patented in the United States Dec. 2nd, 1851, but that a fancy or jacquard weaving loom has been used for such purposes, I am not aware.

I do not claim a series of cams applied to the shaft of a loom, and made by mechanism, as described in the said Baldwin's specification, to operate the treadle levers of a system of heddles, and so as to weave a bag, but in combination with the jacquard apparatus or series of lifters, their lifting mechanism and the rotary regulator pin wheel or its equivalent, I claim the secondary regulator pin wheel or cylinder, or its equivalent, and a mechanism substantially as described, or the equivalent therefor, for imparting to the secondary pin wheel or regulator its proper motions and intervals for rest, whereby, by the combined action of both regulators, the weaving of the body of the bag and the bottoming of it is carried on, as described, my machinery being adapted to the weaving of plain twilled or fancy work, as occasion may require.

MITER BOX—William Tinsley, of Glen's Falls, N. Y. : I claim the hollow grooved central cylinder, adapted to carry saw guides, said cylinder turning upon a pivot in a hanging adjustable fulcrum, as set forth, combined with the lumber box, whose back and bed cad be adjusted to different angles, the whole being combined with the heel guides.

INCLINED SLIDING VALVES—E. H. Tracy, of New York City : I claim the shoe attached to or constituting an enlargement of the side of the valve adapted to sliding on the inside of the case, and admitting of a horizontal or inclined position, and action of the stop cock.

ROTARY LATHE—George Tugnot, of New York City : I make no claim to the idea of turning a fixed object by having cutters arranged on the inside of a cylinder, for that has been done before.

But I claim arranging one or more slide rests to which the cutting tools are attached within a rotary cylinder in the manner and for the purposes described, or in any other manner substantially equivalent.

PLANING MACHINE—Daniel Van Fleet, of Sandusky City, Ohio : I claim, first, not the ogee form of itself merely, but the employment of this form in the throat of the plane so as to make a part of that throat, and not otherwise, of such a size that the swelled part of it shall so meet the shaving as to prevent its curling, and pass it outwardly to the depressed part of the form, which discharges it freely without clogging, as explained.

Second, I also claim the radial arms, b, b', b'', in their combination in pairs, with the frames carrying the feed rollers and the planing knives, substantially in the manner and for the purpose described.

METAL DRILLS—Wm. Wakely, of Homer, N. Y. : I do not claim making metal drills capable of self-feeding, by employing two wheels, C H, one provided with a greater and the other with a lesser number of teeth, as an equivalent device has already been employed in racket drills for boring metal.

But I claim providing the crank with a sliding handle, and arranging the pinion, F, on the same, so that it may be thrown into gear with one or both of the wheels, C H, as occasion may require, substantially as and for the purpose set forth.

I also claim the arrangement and combination of the pinion, F, spur wheels, C H, and drill stock, B, when provided with a screw, B2, substantially as and for the purposes set forth.

I also claim, for the purpose of facilitating the change in the feed of this particular drill, the making of the wheel in sections, and the substitution of a section having a greater number of teeth for one having a lesser number, substantially as described.

SEWING MACHINES—T. E. Weed, of Williamsburgh, N. Y. : I claim the vibrating spring fly, a, whether adjustable or not, for taking up the slack of the thread during the descent of the needle, and releasing the thread as the needle enters the cloth, substantially in the manner set forth.

WASHING MACHINES—Wm. Wheeler, of Acton, Mass. : I claim the method, as described, of giving motion to the dasher of a washing machine, by means of the eccentric, C, operating against the elastic plates, F, for the purpose set forth.

WINDLASSES.—Henry Richards and Chas. F. Windsor, of Boston, Mass. : We do not claim a cam at the end of a capstan or windlass, as that has been used before.

But we claim the screw detached from the windlass and encircling it, by which the cable is caused to fleet itself by the turning of the windlass in heaving in.

BINDING GUIDES FOR SEWING MACHINES—O. G. Boynton, of Haverhill, Mass. (assignor to Nehemiah Hunt, of Boston, Mass.) Ante-dated June 1st, 1854 : I claim so combining the guide with or fixing it on the presser, that it, the said guide, may be lifted with and by the presser, and rise and fall with it, so as to accommodate the guide to the varying thicknesses of the material, while the sewing of the binding on such material is being effected, and also to support such guide so that it may offer no such obstruction to turning of the cloth on the base plate, as it would present, were it supported directly on the base plate.

SEWING MACHINES—T. J. W. Robertson, (assignor to T. J. W. Robertson and A. E. Beach,) of New York City : I claim, first, making the interlocked stitch by causing the needle to pass its thread over a stationary thread case, in which the other thread is contained, in the manner substantially as described.

Second, the combination of the thread case, t, with the thread case holder, u, by means of a spring, t', or its equivalent, that is to say, when so arranged as that while the spring holds the thread case securely in place, the thread case holder and spring shall permit the needle thread to be drawn around the thread case to form the stitch, in the manner substantially as described.

Third, the combination of the sliding frame, f, needle bar, g, and movable cam, m, in the manner substantially as described.

Fourth, the combination of the feeding bar, p, having a plate, r, and feed roller, r', with the sliding frame, f, in the manner substantially as described.

MACHINERY FOR MAKING ROPE AND CORDAGE.—Arad Woodworth, 3rd, of Boston, Mass., and George Chamberlin, of Olean, N. Y. : We claim, first, the arrangement of the bevel gears or their equivalents, with their guiding holes, for conducting each thread arranged outside of the center of the said gears, as set forth, whereby a draught is created upon each thread separately, and the threads in the several spool frames are prevented from being twisted or formed into strands until they are all brought together and drawn out of the last spool frame, as stated.

Second, we claim giving the strands, after they are formed, a revolution at the same time, and in the same direction that the laying up machinery revolves by means substantially as described, for the purpose of preventing the twist first given from being partially lost or taken out by the process of laying them up, by which each strand retains the same amount of twist that was imparted to it by the twisting machinery, thus forming an even and hard twisted rope.

DESIGN.

STOVES—H. W. Robbins, of Baltimore, Md.

[Boston Correspondence.]

Models, Ocean Steamers.

MESSRS. EDITORS—I suggested once to the Secretary of the Patent Office the expediency of having a room destined for the models of failures, with a notice attached, showing the cause of the failure, this would be an impressive lesson to great numbers who pass their lives in vain pursuits, for the want of a little elementary knowledge of mechanical or chemical philosophy. I have known two persons in this city who have passed a large portion of their lives, and expended much money on projects which depended on the syphon, thinking that it was the superior weight of the liquid in the longer arm of that instrument which caused the liquid to flow.

Some months ago there was a project on foot in New York for a steamer which would cross the Atlantic in six days. Now, sir, although I am not very credulous, I believe in the possibility of this enterprise, provided the whole capacity of the vessel be employed by the steaming and propelling apparatus, carrying no passengers or freight, but letters and papers only. I would have the vessel very long, strong, and narrow, with the bows more like the Dutch luggers that like our clippers. Fulton's idea was to raise the steamer out of the water rather than force its way through it, being aware that the resistance of the air was much less than that of the water. Such a steamer might have four wheels and a screw, the four wheels should be far apart, and the aft wheel the largest, I should think, but that would be determined by experiment.

The question will now be asked—will it pay? This may perhaps be determined by figures. The time saved going and returning, loading and unloading, and the postage charged constitute the data for the problem. It is quite certain that such a line of steamers would have the monopoly of postage, at a considerable advance in price, and would supercede the costly project of telegraph.

FRANKLIN.

Boston, Nov. 22nd, 1854.

[We think the suggestion by our correspondent, of having a room in the Patent Office to show the incorrect principles upon which some machines have been built, a very excellent one indeed, and if it were carried out, would do much good. Steamships, to sail fast on the ocean, must have considerable breadth to give them stability. and a long fine entrance with the hollow bow, enables them to ride the waves better than the bluff Dutch luggers.

Canada Thistles—Salt.

MESSRS. EDITORS—Your correspondent writing to the SCIENTIFIC AMERICAN, a few weeks ago on this subject, states that Canada thistles can be be destroyed by an application of salt. He omits to state the cost. This has always been an objection to that mode of their extermination. The less expensive mode in accomplishing the task is thorough culture. I am aware that many contend that this mode is not effectual ; but whoever knew Canada thistles to flourish in a well cultivated garden? The root while in the ground cannot retain its germinating force more than one season without aid from a leaf. In field culture, plow the land at least for ten successive weeks in midsummer, and the success will be complete ; the cost will be about fifteen dollars per acre, on an average. The land will be in a good condition for a fall crop.

I propose two questions:—First, What quantity of salt will it require to destroy one acre of Canada thistles?

Second, How long must the land remain idle by reason of the excess of salt remaining therein? A. OSBORN.

Albany, Nov. 27th, 1854.

Steel and Glass.

MESSRS. EDITORS—Perhaps the following may serve to answer one of the questions in No. 4, of the present volume of the SCIENTIFIC AMERICAN, by T. S. G., of Ohio :—

It is a well known fact that steel is nothing more or less than refined iron impregnated with carbon. Now if the carbon contained in the steel be crystalized, the steel is rendered hard, and if its carbon is in solution or uncrystalized, it becomes soft. Hence the reason why steel becomes hard or soft, is because of the crystalization or noncrystalization of its carbon, and not because of its particles being brought in closer contact with each other, as many suppose.

A piece of hard steel is actually larger than the same piece when soft, as any one may prove who will take the pains to try.

Again, steel may be made hard by very gradual cooling when heated to redness, or soft by heating and suddenly cooling the same. To make hard steel, cool it in hot melted tin, and to make it soft cool in soap suds from soft water.

With regard to the other questions I am in the dark, yet I believe that patient investigation and persevering study will let man into the cause of the different phenomena of all nature's works.

There is a peculiarity in common glass I am unable to explain as yet, and which, perhaps, if thoroughly understood, might be the means of making known a principle of incalculable worth to the world.

It is well known to many that glass may be easily filed, sawed, cut, drilled, or turned by keeping the edge of the tool constantly wet with spirits of turpentine. Now what is the action of the spirits of turpentine on the glass to render it capable of being cut in this manner? Is it electro-chemical produced by friction, or is it merely chemical, only dissolving the carbon or other hard ingredients in its composition? Perhaps it may be neither, and some of your many readers can tell me. C. G.

Bethel, Ohio, November, 1854.

Artesian Wells in California.

An abundant supply of beautiful water has been obtained in San Jose, Cal., by boring an artesian well. The want of good drinking water was a great drawback to the prosperity of this place, but since it has been proved that plenty of good water can be obtained by deep boring, new buildings have gone up with extraordinary rapidity.

A glowing account of the rapid increase of population and improvement in Washington Territory is given in the Olympia *Pioneer*. There are in Olympia ninety well-constructed buildings, and in the Territory fifty mercantile establishments and thirty-three saw mills, with a population of 6000 souls.

Oddities and singularities of behavior may attend genius; when they do, they are its misfortunes and its blemishes. The man of true genius will be ashamed of them; at least he will never affect to distinguish himself by whimsical peculiarities.

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TO CORRESPONDENTS.

J. D. B., of Ala.—There is nothing patentable in your corn sheller; it is quite common to employ a toothed cylinder in combination with a fluted bed. Carter's, and some other machines, employ the same contrivance,

H. S. P., of N. H.—Your improved pump will operate if properly made; but you have long since been anticipated, and we are of opinion that a patent cannot be had. Will make application for you, however, if you desire.

E. H., of Mass.—We think a patent could be had for your improvement in stave machines. We like the plan very much.

O. P. Q., of Mass.—We are not aware of any patent having been granted for a multiplier for stationary engines applied to street railroads; wire rope is the best for the purpose named. Steam power is cheaper than horse power.

A. C. M., of N. Y.—Liquid glue is simply common glue dissolved in a considerable quantity of water.

H. S., of Ky.—Your improvement in boilers strikes us as being new, useful, and patentable. The idea is a good one. Cost of illustration will be $20. For the patent a better model will be required.

A. McD.—Your plan of placing the cylinder directly beneath the saw and dispensing with crank and pitman is not new; it has been for a long time in successful operation. The plan was illustrated on page 316, Vol. 3, Sci. Am., June 1848—as the invention of A. F. Ward, of Pa. Under these circumstances we cannot advise you to apply for a patent. Send on your other ideas.

E. F. F., of Vt.—The substance you use is a magnetic oxyd of iron: we know of nothing that will change its color but sulphur or sulphuric acid. Whether the latter will have any effect upon the substance when it is combined with oil on paper remains to be seen. You can test it yourself more satisfactorily than we could for you, now that you know what to apply. It requires no test to ascertain whether such an ink will print: we know before-hand that it will. We doubt whether you can make it any cheaper than the present articles. The idea is a good one, and probably patentable.

O. P. S., of Ohio—We think a patent can be had on your huller. There is however some risk and doubt. You need not send the cut if it has ever appeared in any other paper: we have difficulty, already, to find space for all the original cuts which we publish, and we invariably decline to print second-hand engravings.

J. S. Y., of Pa.—We are of opinion that certain portions of your switch arrangement can be patented. The idea of a switch so constructed as to be operated by the engineer of the moving locomotive, is not new; we suppose you are aware of that. In applying for a patent the first step will be to construct a model.

W. S., of Mass.—We think of no plan for relieving the condenser except by pump; neither do we bring to mind any method of keeping up a uniform temperature of the parts.

A. J. G., of Ill.—$2 received: all right. We do not know of any person who would purchase the invention before the patent is secured; the improvement appears to be a useful one.

L. B., of Mich.—We do not discover any special novelty in your slide valve and arrangement of steam ports. We think it very doubtful whether a patent can be had.

S. C., of Pa., and B. R., of Ky.—In No. 10 of the present volume we informed a correspondent (J. B., of Del.) that a left-hand thread could not be cut with a right-hand pair of dies; S. C., of Pa., takes exception to this, and offers to bet $50 that he will produce a right-hand tap that will cut a left-hand screw. B. R., of Ky., also says he can produce a tap that will cut either a right or a left-hand screw, and infers that dies can be made which will do the same. The original question submitted to us was not whether an instrument could be constructed which would cut a right or a left-hand thread as happened to be desired; but, whether a left-hand thread could be cut by a *right-hand pair of dies*. We say it cannot; but every machinist's boy knows that a tap can be so spurred that it will scratch a thread either to the right or left, according as it is turned and fed. In the same manner spurred dies may be made which will scratch threads either way. A right-hand pair of dies, however, won't do it.

J. T., of Ind.—We have received your insect, with its legs, wings, &c., broken: it has some resemblance to the eel flies, which are common in many parts of our country.

C. M. E., of Pa.—Your idea of supplying the groove of city railways with an elastic substance, is a new one to us, and if you can make it practicable and serviceable in all seasons of the year, we think is a good thing. We do not see how it can be made to answer; test it, this is better than any opinion you can get on the subject.

J. S. D., of Tenn.—We do not think it possible to make a lens as you describe—the water and glass would be mediums of different density, and refraction would be produced which it would be difficult if not impossible to compensate for.

M. M. S., of N. Y.—A car or vehicle capable of being moved by the weight of the load upon it would be a decided novelty and if successful it would make your fortune. There is in our opinion no doubt on this latter point. In respect to the former you will be acting prudently by spending very little money upon experiments.

J. G. S., of Pa.—The Society for the assistance of inventors is defunct, and there is no ground to hope for its resurrection, or any advantage from any such societies. They are usually the offspring of a few broken-down politicians or of highly imaginative persons who are practically ignorant of business. It is a physical impossibility to render such a society of any benefit to inventors, unless some millionaires establishes a fund for the purpose. The claims for benefices under any system, would be immense, because almost every inventor *at heart*, is poor, and to discriminate would be out of the question—an inventor must sustain himself or enlist the assistance of those who know him.

Money received on account of Patent Office business for he week ending Saturday, Dec. 2:—

V. P., of Ind., $25; A. & S., of Ohio, $25; G. L. S., of Mass., $25; P. L. A., of Pa., $30; W. J. F. L., of Pa., $25; J. H., of Vt., $25; R. T., of Canada, $50; J. S. W., of Ala., $20; W. S. B., of S. C., $30; N. & H., of Ind., $10; H. S. R., of N. J., $30; J. S., of N. Y., $10; C. M. C., of N. Y., $50; E. P. B., of Ct., $30; J. C. G., of Mass., $25; D. W. H., of Mo., $30 12 cents; S. D. W., of Mass., $30; J. D. F., of Ct., $15: T. S., of N. J., $30; M. B., of N. Y., $30; T. J., of Pa., $20; W. S. B., of Pa., $25; A. S., of London, $550; H. H., of Mass., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 2:—

J. S. W., of Ala.; W. & S., of Ohio; H. R. & C., of Vt.; G. L. S., of Mass.; V. P., of Ind.; W. J. F. L., of Pa.; J. C. G., of Mass.; V. P. C., of N. Y.; W. C., & J. S. B., of N. Y.; J. T., of Pa.; W. S. B., of Pa.

☞ We are able to furnish all the back numbers of the present volume of the Scientific American, and to new subscribers we shall continue to send the back numbers as long as we have them, so as to render their volumes complete.

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CHEAPEST MAGAZINE IN THE WORLD—We shall publish on the first of January, 1855, a new Magazine entitled "Ballou's Dollar Monthly Magazine," a work which will contain one hundred royal octavo pages of reading matter in each number—being more than any of the Philadelphia $3 magazines—and forming two volumes each of six hundred pages, or twelve hundred pages of reading matter yearly, for one dollar. Being resolved to furnish good and interesting reading matter for the million, and at a price which all can afford, Ballou's Dollar Monthly will be filled with entertaining and popular stories by our best writers, with sketches, poems, scraps of wit and humor, and a miscellaneous compound of the notable events of the times in both hemispheres; forming an agreeable companion for a leisure moment or hour, anywhere, at home or abroad. Terms—One dollar per annum. Single copies ten cents. Subscribe early and procure the work complete,
M. M. BALLOU.
Publisher and Proprietor Boston.
Subscriptions received by SAMUEL FRENCH, No, 121 Nassau st., Agent for New York. 1

A TREATISE ON THE ELEMENTS OF MACHINES.—By A. Pollack, C. E. This work which is of a thorough practical character, and designed for the use of engineers, draughtsmen, and machinists, will contain drawings of all the component parts of machines in use in this country and in Europe, many of which are entirely new. It will appear in quarto form, and be completed in about ten monthly parts, each part containing ten lithographic plates, with the explanatory text. The first part now published, relates entirely to the wood employed in machinery. Price per number, 50 cents, on receipt of which it will be mailed, free of postage, to any part of the United States. RICHARD H. SEE, Publisher, 106 Chesnut street, Philadelphia. 1*

CIRCULAR SAW MILLS—The undersigned manufacture for sale Child's Patent Circular Saw Mills for cutting lumber from logs of any size, with 40 and 24 inch, to 48 and 54 inch saws. Also single mills with 36 inch to 72 inch saw. These machines are warranted capable of cutting more lumber in a given time than any other saw mills in use. H. WELLS & CO., Florence, Hampshire Co, Mass. 13 3*

A Practical Engineer at present in New York, is about to return to England, where he has a manufactory of the first class, is desirous of introducing some good American invention in that country. Letters addressed Engineer, care of AUCHINCLOSS & SONS, 49 Beaver street, N. Y. 13 2*

United States Patent Office,
Washington, November 18, 1854.

ON THE PETITION of Squire Whipple, of Albany, New York, praying for the extension of a patent granted to him on the 24th April, 1841, for an improvement in "the construction of iron truss bridges," for seven years from the expiration of said patent, which takes place on the 24th day of April, 1855—

It is ordered that the said petition be heard at the Patent Office, on Monday, the 26th of March next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 16th of March: depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York, and New Hampshire Patriot, Concord, N. H., once a week for three successive weeks previous to the 26th day of March next, the day of hearing.
CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 13 3

United States Patent Office,
Washington, August 4, 1854.

ON THE PETITION of David Matthew, of Philadelphia, Pennsylvania, praying for the extension of a patent granted to him the 31st day of December, 1840, for an improvement in "Spark Arresters," for seven years from the expiration of said patent, which takes place on the 31st day of December, 1854:

It is ordered that the said petition be heard at the Patent Office on Monday, the 18th of December next, at 12 o'clock M., and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days from the day of hearing. All testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the Office, which will be furnished on application.

The testimony in the case will be closed on the 8th of December; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvania, Philadelphia. Penn.; Scientific American, N. Y.; Post, Boston, Mass., once a week for three successive weeks previous to the 18th of December next, the day of hearing. CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 11 3

IRON PLANERS—NEW PATTERN—Now building, and for sale on better terms than any others in the country of same quality. Address New Haven Manufacturing Co., New Haven, Conn. 11 tf

IRON MOLDERS' FACINGS—Viz., Sea Coal, Anthracite and Charcoal, Soapstone and Black Lead, for sale by G. O. ROBERTSON, 135 Water street, corner of Pine. 11 4*

WANTED—By a Millwright and Pattern Maker, a situation in some Southern or Western city. Satisfactory reference given as to ability and habits. Address Pattern Maker, 148 Third street, Albany, N. Y. 12 2*

TO MANUFACTURERS AND MACHINISTS—The advertiser is in possession of an invention relating to the manufacture of ingrain carpets and other fabrics, and which will, when carried into effect, make a complete revolution in their production: any one willing to take out a patent conjointly with the inventor, for the above discovery, may be made acquainted with the terms by applying by letter, postage paid, J. J. B., Oak Grove, Christian Co., Ky. 12 2*

HARRISON'S MILL, PRICE LIST, &c.—These Mills are warranted to give satisfaction.

Size of stone,	20 inch.	30 inch.	3 feet.	4 feet.
Cash price of single geared mills	$100	$200	$300	$400
Do. of double geared do.	$115	$225	$330	$450
Bush. they grind in 10 h	50	150	225	350
Horse power required	1 to 4	6 to 12	12 to 18	50 to 30
Revolutions per minute	500to700	500to800	400to700	400to550
Size of pulleys	9 in.	15 in.	18 in.	24 in.
Width of do.	5 in.	8 in.	10 in.	12 in.
Hight of center of pulley from the floor	9 in.	10 in.	11 in.	14 in.
Weight of Mills	500 lbs.	1400 lbs.	1800 lbs.	300 lbs.
Hight of do. with hopper	2 ft. 9 in.	2 ft. 9 in.	4 feet.	5 fe3t.

The above sizes, with the latest improvements, to be had of EDWARD HARRISON, sole manufacturer, New Haven, Conn. 12 7*

ZINC GALVANIZED WIRE—J. G. GOLD wishes to purchase a large quantity of zinc galvanized wire, Nos, 11 and 12. Any person or persons who have this article for sale will do well to address him at Alliance, Stark Co., Ohio, or at Deerfield, Portage Co., Ohio. 12 2*

READING'S PATENT HORSE POWER CORN Sheller and Cleaner. Patented July 13th, 1852. This machine took the first premium in 1853 at the World's Fair, American Institute, New York; Franklin Institute, Philadelphia, and six other county and State Fairs, and its superiority is fully established: it will shell and clean perfectly from 75 to 150 bushels per hour, the right to make and sell the machines can be had by responsible manufacturers at $6 each, and agents who effect sales of Territory shall be entitled to 50 per cent. of the gross receipts, as the owner is unable to attend to the business, here is an inducement for persons to engage, as the utility of the machine is known. Apply to WM. READING, Washington, D. C. 11 4*

MACHINE GROUND CIRCULAR SAWS—(Patent applied for.) Mill men would do well to try these saws, are perfectly free from thin or thick places, can be used thinner and with less sett, and run faster than any other hitherto made. All diameters and thicknesses warranted perfectly true. HENSHAW & CLEMSON, 31 Exchange street, Boston. 11 8*

IMPORTANT TO INVENTORS, &c., &c.—ALFRED ASTON, No. 4 High street, Birmingham, England, is open to purchase for cash all kinds of mechanical and useful inventions or manufactured articles that will command a ready sale in England. Established in the year 1770 for the sale of all articles in the hardware and general trade. Address paid letters as above. 11 4

DICTIONARY OF TECHNICAL TERMS—In French, English, and German. A new work presenting all the terms used in science and art. The terms are first given in French, then in English and German. It is the first of three volumes arranged differently, and is a very useful work. For sale at this office, price $1,31

TO SPECULATORS IN PATENT RIGHTS—has several improvements (some in machinery and some of them in household articles) which will be sold on terms to admit of profitable speculations. Apply corner Myrtle and Classon Aves., East Brooklyn. 11 4

THE FRENCH EXHIBITION—Parties who have applied for space in the French Palace of Industry, and who do not intend to be present at the Exhibition, are recommended by the undersigned to arrange with Messrs. Gardissal & Co., No. 29 Boulevard St. Martin, Paris, who are prepared to put upon Exhibition, attend, and effect sales of articles intrusted to their care. It is a responsible concern. S. H. WALES, State Commissioner, Saientific American Office.

PIG IRON—SCOTCH AND AMERICAN—Also Cupola Fire Bricks, Clay and Sand, for sale by G. O. ROBERTSON, 135 Water street, corner of Pine. 11 4*

AMERICAN STONE DRESSING MACHINE—"Porter's Patent," illustrated in No. 8, present Volume. The subscribers are now prepared to sell rights to use the above machine, patented August 8th, 1854. One is now on exhibition at Nos. 35 and 37 Ganesvoort street, in the city of New York, and all persons interested in the business are invited to visit it, as the machine itself will give the best idea of its own capacity. Being very simple in its construction, and adapted to a great variety of purposes, requiring but little power, saving an immense amount of labor, and producing surfaces far more perfect than can be produced by hand, it is believed that no one carrying on the business of working stone, of whatever nature, can long afford to be without one.
CAPWELL & PORTER,
8 6* New York City.

THE STAIR BUILDERS' GUIDE—By Cupper, now ready; price $6. By remitting, the book will be sent by mail or express to any part of Canada or the United States. W. GOWANS, 178 Fulton street. 9 4*

PRICES GREATLY REDUCED—JOHN PARSHLEY, New Haven, Conn., will have 12 of his No. 2 Iron Planers finished by the 1st of January, 1855, to plane 12 feet long, 36 inches wide and 30 inches high, with down and angle feed in the cross-head, they weigh about 8,000 lbs, and are in workmanship and design equal to any planers built in New England. Price 550 dollars cash. Boxing and Shipping extra. For cuts address as above. 8 tf

ESTABLISHED IN 1796—Philosophical, Mathematical, and Optical Instruments. Our priced and illustrated Catalogue furnished on application, and sent by mail free of charge. McALLISTER & BROTHER, Opticians, 48 Chesnut st., Philadelphia. 9tf

YOU CAN GET THE NEW YORK WEEKLY SUN three months for 25 cts.; six months 50 cts.; one year, 75 cents, 16 months, $1. Or three copies one year, $2; eight copies $5; twenty-five copies $15; and by canvassing for subscribers you may get one of the five cash prizes $50, $20, $15, $10, and $5—for the largest lists sent in before 3rd Feb.—Specimen copies gratis.—Send letters and money (post-paid) to MOSES S. BEACH, Sun Office, New York. 6

COTTON AND WOOLEN MANUFACTURERS' Supplies of every description; also machinery of all kinds; wrought-iron Tackle Blocks of all sizes; Leather Belting superior oak tanned; Bolts, Nuts, and Washers of all sizes on the most reasonable terms.
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IRVING'S PATENT SAFETY CIRCULATING STEAM BOILER—This is the most safe, economical, compact, and convenient boiler devised, occupying less than half the space, consuming only half the fuel, generating more steam of a better quality, and requiring less labor in management and use than any other known. The rapid and powerful circulation which it secures, prevents incrustation or scale, and preserves the internal surfaces fresh and clean. On this account it is believed to be better adapted to salt or turbid waters than any boiler extant. Its compactness, its strength, its economy of space and fuel, and its rapid generation of steam, peculiarly adapt it to the navigation of our western rivers, as well as to all stationary, portable, and marine purposes. The attention of all consumers of steam, of mechanics and engineers, is invited to a critical examination of its merits. Boilers of all sizes furnished on short notice. Rights negotiated and circulars obtained on application at the office of the Company. W. F. PHELPS, Sec'y Irving Boiler Company, 347 Broadway. 10 6eow*

MACHINERY—S. C. HILLS, No. 12 Platt st., N. Y. dealer in Steam Engines, Boilers, Planers, Lathes Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines Woodworth's and Daniel's Planers; Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 7 e3w

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store, it occupies a space 5 by 3 feet, weighs 1500 lbs. price $240; other sizes in proportion.
8 e3w

KENTUCKY LOCOMOTIVE WORKS—Corner of Kentucky and Tenth streets, Louisville, Ky.—The proprietors of the Kentucky Locomotive Works would respectfully inform Railroad Companies and the public generally, that, having completed their establishment, they are now prepared to receive and execute orders with fidelity and dispatch. They will contract for Locomotives, Passenger, Baggage, Freight, Gravel, and Hand Cars, of every style and pattern, as well as all kinds of Stock and Machinery required for railroads.—Particular attention will be paid to Repairing, for which they have every facility. They are also prepared to contract on favorable terms for building all kinds of Machine Tools, such as Turning Engines, Laths, Planers, Drills, Slotting, Splining, and Shaping Machines of every variety of pattern. Having also a large Foundry connected with the establishment, orders for castings are solicited, and will be filled with promptness. Car Wheels of any pattern can be furnished on short notice. Double and single plate and Spoke Wheels of all sizes constantly on hand. Communications or orders must be addressed to OLMSTED, TENNEYS & PECK, Louisville, Ky. 40 6m*

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 6 10*

BUFFALO MACHINERY DEPOT—Terrace St. and 36 Lloyd st., Buffalo; J. W. HOOKER, Proprietor, H. C. Brown, Superintendant, offers for sale Machinists' tools of all kinds: Engine Lathes, Planers, Drills, Chucks, Boring Mills; also machinery of all kinds on hand or furnished to order. 7tf

1854—**MICHIGAN CENTRAL R.R. LINE** D.W. WHITING, Freight Agent, and also General Forwarder, having been a practical machinist, is prepared with skill and implements to handle and ship by any line, all kinds of machinery and manufacturers' wares. Mark plainly, care D. W. WHITING, Buffalo, N. Y. 7tf

STEAM ENGINES AND BOILERS FOR SALE.—One new eight-horse engine. One second hand five-horse engine. Tubular boilers, second-hand, suitable for same. One second-hand two horse portable engine and boiler. THOS. PROSSER & SON, 28 Platt street, 4tf

STAVE AND BARREL MACHINERY—Hutchinson's Patent. This machinery which received the highest award at the Crystal Palace, is now in daily operation there. Staves, heading, &c., prepared by it are worth to the cooper 20 to 40 per cent. more than when finished in any other way. Special attention is invited to the improved Stave Jointer. Apply to C. B. HUTCHINSON & CO., Crystal Palace, or Auburn, N. Y. 1 tf

PATENT DRIERS—Zinc Driers, Graining Colors, Stove Polish, Gold Size, &c., &c., 114 John street, New York. QUARTERMAN & SON, Manufacturers. 1 6m

NEW HAVEN MANUFACTURING COMPANY Machinists' Tools. Iron planers and Engine Lathes of all sizes. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Chucks, &c., on hand and being built by the quantity, which enables us to sell low. For cuts giving full description and prices, address New Haven Manufacturing Co., New Haven, Conn. 1 tf

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill Irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
8 1y* LOGAN VAIL & CO., 9 Gold st., N. Y.

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New Haven Manufacturing Co., New Haven, Conn., or to S. C. HILLS, our agent, 12 Platt Street, New York. 1 tf

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc.
CHARLES W. COPELAND,
1 tf Consulting Engineer, 64 Broadway.

THE MERIDEN MACHINE CO.—Successors to Oliver Snow & Co., West Meriden, Conn. Have on hand and make to order a great variety of Lathes, Planers, and other machinists tools of superior quality and finish. Cuts of these tools may be had on application as above, with full particulars. They also manufacture Farnam's Patent Lift and Force Pumps of all sizes. For mines, factories, railroad stations, &c. Having a large and extensive variety of patterns, the accumulation of over 20 years business, and extensive facilities for making light or heavy castings, are prepared to contract for any kind of mill work, mining machinery, &c. New York Office and Sample Room, No. 15 Gold, cor. Platt st. 1 3m*

PHOENIX IRON WORKS—GEO. S. LINCOLN & CO., Hartford, Conn. Manufacturers of Machinists Tools. Are constantly making and have now on hand an assortment of Screw Cutting Engine Lathes, viz.:—No. 1. bed 10 ft. long, swing 20 inch. No. 2. bed 14 ft. long, swing 30 inches. No. 3. bed 16 1-2 ft long, swing 40 inches, with improved bed, cast steel spindles, feed motion carried by a screw, toothed rack for moving tool rest by hand, improved gibb rest and tool stock, stationary and traveling back rest; also manufacturers of Lathes for turning Locomotive Driving Wheels, small Power Planers, Upright Drills, Power Punching Presses, &c. Designs of the tools with further descriptions, will be sent by addressing as above. 1 3m*

ENGINEERS, DRAUGHTSMEN, AND MECHANICS supplied with Drawing Instruments, separate and in cases. Parallel Rules, Scales, Dividers, Metallic Tape Measures, Linen do., Chains, Surveyors' Compasses, Levels and Transits, and a large assortment of Optical and Mathematical Instruments, wholesale and retail by JAS. W. QUEEN, of the late firm of McAllister & Co., 264 Chesnut st., Philadelphia. Illustrated catalogues gratis by mail. 3 3m*

NORTHVILLE MACHINE WORKS—Manufactory of Machinists Tools, consisting of Engine Lathes, Power Planers, Hand Lathes, Engine Lathe for turning chair stuff, all of the most improved patterns and quality of workmanship. Worcester, Northville, Mass. August 9, 1854. TAFT & GLEASON. 50 1y*

WIRE ROPE OF IRON AND COPPER—For Mines, Inclined Planes, Hoisting and Steering purposes, Stays or Braces, &c., &c., much safer and far more durable than the best hemp or hyde ropes. Also for Sash Weights, Dumb Waiters, Lightning Conductors, &c. CHARLES W. COPELAND, No. 64 Broadway. 5 3m

MACHINISTS TOOLS—SHRIVER & BRO., Cumberland, Md., (on B. and O. Railroad, midway between Baltimore and the Ohio River,) manufacturers of Lathes, Iron Planers, Drills and other machinists tools
50 6m*

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Science and Art.

Gunpowder.

A little saltpetre, a little charcoal, and a little sulphur, stirred up together, constitute that magic black powder, the power of which makes a nation tremble. It is the guard-chain and strong bolt which keeps the barbarian thief from entering the precints of the peaceful and industrious. Gunpowder is indirectly the great peace constable of the world.—Prior to this clever chemical invention, the wars of sects, classes, and nations, were vexatiously prolonged; Charlemagne spent a long reign in perpetual war. During the Roman Empire war scarcely ceased; and so it had been with all the preceding nations.—The history of the world is a history of shifting wars. Prior to the invention of gunpowder, or more correctly speaking, prior to its application as a means of warfare, a prolonged peace, such a peace as the last forty years in Europe, has scarcely been recorded. The fact is, that when men discovered the terrible effects of this new engine for their destruction, they began to think more seriously of war. The old battles fought without gunpowder were not half so much to be dreaded as a modern war. The battles of Ptolemy and Ramises, kings of Egypt, of Nebuchadnezzar of Babylon, and Xerxes of Susa, were of a class that may be compared to a mighty host of robbers sacking a country, with little or no danger to themselves. What a contrast do such battles present to the terrific encounter at Waterloo, in which thirty thousand men were killed after a few hours contest! All men fear and respect gunpowder. Nations spend millions of money in building fortifications, and endeavoring to make strongholds impregnable to the effects of this simple mixture; but all their efforts are unavailable. No fortress that has ever been erected can hold together against bomb-shells, rockets, and balls, flying through space with lightning speed, urged on by gunpowder.—The source of power in gunpowder lies with the saltpetre. This substance, termed nitrate of potash, consists of nitric acid and potash. Now, the nitric acid is, as it were, an immense volume of atmospheric air, condensed into a solid, ready on demand to assume the air form by the touch of a spark of fire. When sulphur and charcoal are mixed with nitre (saltpetre,) and a spark is applied, the sulphur (brimstone) ignites, setting fire to the charcoal. Air is applied to these substances by the decomposition of the nitre; the atmosphere condensed therein instantly unites with the combustible, and the result is an intensely hot gaseous compound, two thousand times the bulk of the original solid. The English government gunpowder is composed of 75 parts of nitre, 15 of charcoal, and 10 of sulphur. The Russian government powder consists of 73¾ parts of nitre, 13½ of charcoal, and 12¼ of sulphur.

SEPTIMUS PIESSE.

Preparation of Indigo in Central America.

Indigo, it is well known, is only an oxyd of the juice extracted from the plant by fermentation, which is at first of a green color. For this purpose the plant is cut close to the root, heaped up in large walled reservoirs, and the whole is put under water. The hot sun acting on the surface soon turns the water saturated with the juice green, when it is drawn off into other vessels, where by constant stirring and whipping it is brought into contact with the atmosphere, and thus gradually acquires its beautiful deep blue. In other countries, the stirring process is usually effected by an ox-mill or by water power, but here a contrivance is adopted which, at the first glance, presents a really comical appearance. Across the vessel is laid a wooden pole, in the middle of which is fitted a sort of rocking-board. Two men sit on this, one at each end, and by their alternate rising and sinking, keep the whole machine in motion, like the toy-sawyers manufactured at Nuremberg. A more comical spectacle cannot be imagined than that of these squatting, shrieking, perspiring Indians, copper-colored above, and of the purest indigo-color below.

History of Reaping Machines.—No. 11.

FIG. 32.

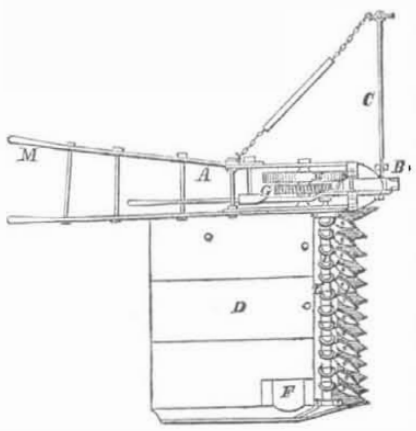


Figure 32 illustrates the invention of Wm. Harkes, of Cheshire, Eng. This contrivance is carried upon a species of plow framing, A, which has a front pole, B, and transverse stay, C, for the attachment of a horse. The platform, D, carrying the cutting mechanism is bolted transversely to the side of the frame, and the whole is supported on the running wheels, E F. The wheel, E, is carried on a short shaft, set in end bearings in the front rectangular portion of the main iron frame, and it has upon its shaft a spur wheel, G, acting upon a pinion, H, fast on the inner end of the long horizontal shaft, J. This shaft revolves in end bearing on the front edge of the platform, and is formed or filled with a series of cams, or differential scrolls; this detail of the apparatus as actuating the cutters, being the essential feature of novelty in Mr. Harkes' plan.

The cutters consist of a row of spear-shaped fixed blades, set on the front edge of the platform, so as to travel along at a uniform hight from the ground. The front projecting ends of these cutters are pointed, so as to effect the easy division of the standing grain for the passage through, and cut of the machine, each cutter is caused to act as duplex shears, by the addition of a row of oscillating cutters, L. These cutters are set immediately over the fixed ones, each one turning upon a stud center of its own, and having a back notch in its plate, for the entry therein of the corresponding revolving cam of the shaft behind. Then, as the machine proceeds, the revolution of these cams gives a quick reciprocatory movement to the cutters, L, which, like those beneath them, are double edged, to cut both ways. The machine is guided, and its hight of cut regulated by the handles, M, and as the corn is severed, it falls back on the platform, D, whence it is carried off by a self-acting rake, (not represented) for an attendant who follows. The whole details are well arranged, and the gearing is simple.

The foregoing descriptions embrace the whole history of reaping machines in foreign countries up to the year 1853, except an indifferent attempt of a French inventor, and the contrivance of an Italian, Sig. E. Perancini, of Furin, Sardinia, a model of whose invention was exhibited in the Agricultural Department of the American Crystal Palace.

American Reapers.

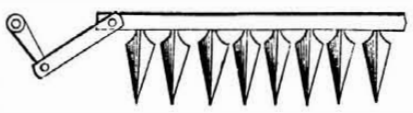
The attention of our countrymen was directed at an early period to the importance of reaping by machinery, and we find that a patent was granted on May 17th, 1803, to Richard French, and J. T. Hawkins, of New Jersey. We have now a letter from R. French, No. 276 North 10th st., Philadelphia, son of the inventor, who says that his father constructed a working machine, and tried it in a field of rye, and that it cut a large quantity of the grain. Why it was dropped he cannot tell. This reaper was supported on three wheels—one wheel extending into the grain. The horses drew in front, or rather at the one side opposite the cutters, which were a series of scythe knives revolving on a vertical spindle—a rotary reaper. Beneath the cutters were long wooden fingers extending some distance into the grain, and supporting the grain to the action of the revolving cutters. Directly behind the cutters were fingers that passed between the cradle fingers and removed the cut grain, which fell to the ground ready for binding.

Patents were granted to the following persons for reaping machines:—Saml. Adams, New Jersey, Dec. 28th, 1805. Jno. Comfort, Bucks Co., Pa., Feb. 26th, 1811. W. P. Claiborne, King William's Co., Va., Nov. 8th, 1811. P. Gaillard, Lancaster, Pa., Dec. 4th, 1812. P. Baker, Long Island, N. Y., Feb. 19th, 1814. J. Bailey, Chester Co., Pa., Feb. 13th, 1822. John A. Wadsworth, Portsmouth, R. I., July 3rd. 1824. E. Cope, and J. Hoopes, Jr., Chester Co., Pa., May 18th, 1825. J. Ten Eyck, of Bridgewater, N. J., Nov. 2nd, 1825. John S. Pleasants, Halifax Co., Va., July 28th, 1827. Samuel Lane, of Hallowell, Me., Aug. 8th, 1828. The reaping machine of J. Bailey was a rotary one, having six scythes on its rotating shaft; and was not an improvement on that of French and Hawkins. The reaper of S. Lane was combined with thrashing machinery. It was designed to go out to the field, cut down the grain, and bring back the cleared grain into the garner, leaving the straw and chaff on the field. Whether any of these were ever put in operation or not we cannot tell. E. Ingersoll, of Farrington, Michigan, also obtained a patent for a rotary grass cutter, on May 7th, 1830.

When we reflect upon the fact that so many American patents were granted for grain cutting machines, before Patrick Bell brought his before the public in 1826, no better evidence is afforded of the want of accuracy and fairness in those British journals which asserted, that the inventors of American reaping machines borrowed their ideas from British inventors.

The following engraving, figure 33, is a view of the reciprocating cutters of the machine of Wm. Manning, of Plainfield, N. J., for which a patent was granted on May 3rd, 1831. The machine was very little different from some that are used at the present day, and it appears to have been the progenitor of all our successful grain cutters.—As this is an important patent in the history of American reapers, the following is selected from the specification to give correct and clear idea of its nature, construction, and operation.

FIG. 33.



"I provide an axletree with two wheels, of the common construction. To this axletree I attach shafts, by which a horse is to draw the machine. From the axletree extend two arms in the direction of the shafts; these arms are morticed into, or otherwise attached to the axletree; they are of greater length than the shafts, extending beyond them a sufficient distance for the cutting apparatus to be entirely clear of the horse. The two arms are united together by a cross bar at their extreme ends; which cross bar, when the machine is in action, rests and slides forward on the ground; teeth of six or eight inches in length, more or less, are set like rake teeth, standing forward on the cross bars. These are made slender, and are for the purpose of holding the grass or grain to be cut.

The cutters stand immediately above the teeth; and receive a traversing motion in a way to be presently described.

A flat bar of iron lies along upon the cross bar, and the cutters are to be attached to this upper bar. The cutters are spear shaped, and are sharpened on each of their edges. They may vary in their length and width, but ordinarily they may be about six inches long, and three or four wide at their bases. The grass or grain which is held up by the teeth, passes between these knives, or cutters. To give a traversing motion to them, a lever may extend from the inner end of the hub of one or both of the wheels, to the cutter bar; this lever may work upon a pin at or near its center; a zigzag groove in the hub, or in a wheel attached to it, will give it a vibratory motion, and its connection with the cutter bar at the opposite end, will cause that to traverse."

To Cure A Felon.

A felon generally appears on the end of the fingers and thumbs; it is extremely painful for weeks and sometimes months, and, in most cases, cripples or disfigures the finger or thumb that falls a victim to it. But it can be easily cured if attended to in time. As soon as the pain is felt, take tne white skin of an egg, which is found inside of the shell; put it round the end of the finger or thumb affected, keep it there until the pain subsides. As soon as the skin becomes dry it will be very painful, and likely to continue for half an hour or more, but be not alarmed. If it grows painful, bear it; it will be of short duration compared to what the disease would be. A cure will be certain.—[Exchange.

[As felons are very painful, any remedy to relieve a person from its excruciating pain is valuable. We do not know whether the above is all that it pretends to be or not, but within the past year we have known of the spinal marrow of an ox or cow applied by three different persons, with the most satisfactory results, in relieving the pain and securing a speedy cure of their felons. This we are confident, will be very useful information to many persons. The spinal marrow should be applied fresh every four hours for two days.

LITERARY NOTICES.

IDA MAY is the title of a new work just issued by Messrs. Phillips, Sampson & Co., Boston, Mass. It has already appeared in England, and owing to its peculiar characteristics the authorship is ascribed to Mrs. Stowe by some of our daily papers: it belongs to the same class of works as "Uncle Tom's Cabin."

LIFE IN THE CLEARINGS VERSUS THE BUSH—By Mrs. Moodie, author of "Rouhing it in the Bush," etc. Messrs. Dewitt & Davenport, 160 Nassau st., N. Y., are constantly bringing out excellent and readable book of a popular character. The one before us is a work of charming interest, presenting the happy scenes incident to rural life in Canada, as it is now met with. The description and portraitures are full of life and vivacity. Mrs. Moodie is a fine writer.

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